Anxiety and depression in nursing home patients

Smalbrugge, M.

2006

Martin Smalbrugge

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Prevalence, risk indicators and consequences

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‘En weet je waarmee geluk begint?
Met niet meer bang zijn.’
Guus Kuijer in Het boek van alle dingen.
Amsterdam/Antwerpen: Em. Querido’s Uitgeverij bv, 2005.

‘No one ever told me that grief felt
so like fear. I am not afraid, but the
sensation is like being afraid.’
C.S. Lewis in A Grief Observed,
New York: HarperCollins, 2001.

The study presented in this thesis was performed at the Institute for Research in Extramural Medicine (EMGO Institute) and the Department of Nursing Home Medicine of the VU University Medical Center Amsterdam, The Netherlands. The EMGO Institute participates in the Netherlands School of Primary Care Research (CaRe), which has been acknowledged by the Royal Dutch Academy of Science (KNAW).

The study is based on data which were collected in the context of the Amsterdam Groningen Elderly Depression (AGED) study, conducted at the Department of Nursing Home Medicine and Psychiatry and the Institute of Extramural Medicine (EMGO), VU University Medical Center in Amsterdam and the Department of Social Psychiatry, University Medical Center in Groningen.

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Anxiety and depression in nursing home patients

Prevalence, risk indicators and consequences

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Chapter 1

General introduction

Introduction

In 1990 nursing home medicine was recognized as a medical specialty. Registration as a nursing home physician requires a two-year specialized training programme (Hoek, 2001; Hoek, 2003). Nursing home physicians aim to pro,mote, preserve and restore the quality of life of their patients in close cooperation with other members of the multidisciplinary team: nurses, psychologists, recreational therapists, physiotherapists, occupational therapists, speech therapists, social workers and pastoral counselors (NVVA/NVSG, 2003). They try to achieve these goals by prevention and by adequate and timely recognition and treatment of specific symptoms and disorders such as anxiety, depression and pain that may threat patients' quality of life.

To do this effectively and efficiently one needs to know:

a. the prevalence, the incidence and the risk factors of these specific symptoms and disorders in nursing home patients
b. the impact of the symptoms and disorders on quality of life in nursing home patients
c. an optimal strategy for detection of the symptoms and disorders in nursing home patients
d. an optimal strategy for prevention and treatment of the symptoms and disorders in nursing home patients.

Unfortunately, knowledge about these aspects (a-d) is lacking for symptoms and disorders like anxiety, depression and pain among nursing home patients in the Netherlands.

One strategy used in such cases is to rely on what is known from community-based studies among elderly. But, generalizing the findings of community-based studies, which include relatively healthy older persons, to the frail patients that live in nursing homes is questionable and not appropriate.

Another strategy is to rely on knowledge from investigations in long term care settings in other countries. However, such investigations are scarcely available. Furthermore, socio-cultural differences and cross national differences in the way long term care settings are financed and staffed may hinder generalizing the results of other countries to the Netherlands.

For these reasons, the AGED (Amsterdam Groningen Elderly Depression) study (Jongenelis et al., 2004) was conducted to investigate some of the above-mentioned aspects for depression (a,b,c) and anxiety (a,b) , and to a lesser extent also for pain (a), among nursing home patients in the Netherlands.

The outcomes of the AGED study may be used in the training of nursing home physicians and other care professionals and may enable policy makers in the planning of mental health care services for elderly living in nursing homes with the ultimate goal to improve the quality of life of the residents of these long term care institutions.

The next paragraphs will describe the nursing home setting in the Netherlands in more detail, address the current knowledge about depression and anxiety in the aged, describe the AGED study globally and address the specific research questions of the AGED study investigated in this thesis.

Nursing homes in the Netherlands

A nursing home in the Netherlands is 'an institution that provides temporary or permanent multidisciplinary treatment, guidance, support and nursing care, mainly for elderly patients with long term, complex health problems, expressed primarily in terms of functional disorders and handicaps' (Ribbe, 1993). Most nursing homes have separate units for residents who mainly have physical handicaps, called somatic units, and for residents who mainly have dementia, called psychogeriatric units.
The main goals of nursing home care are the promotion, the preservation or the re-establishment of health, functioning and quality of life (Wendte and Danse, 1994).
Complex problems in Activities of Daily Living (such as washing, bathing, clothing, eating), medical problems and improvement of well being receive high attention (Ribbe, 1993). These complex problems of the patient are addressed in a multidisciplinary care plan. The choice for 'multidisciplinary' care is based on the assumption that the joined output of several professionals is more than the sum of their separate efforts. Joint goals are set for the problems of the individual patient and one shared language is used to describe problems, goals and actions (Hertogh et al., 1996). The nursing homes in the Netherlands employ specially trained nursing home physicians, who work in the multidisciplinary team and are held responsible for the multidisciplinary care plan (Hoek et al., 2003). The multidisciplinary team also consists of nurses, psychologists, recreational therapists, physiotherapists, occupational therapists, speech therapists and social workers (Ribbe, 1993; Hoek et al., 2000).
All nursing homes in the Netherlands are funded under the 1968 Exceptional Medical Expences Act (Algemene Wet Bijzondere Ziektekosten: AWBZ). In 2004 there were 345 nursing homes and 66.329 patients receiving nursing home care. Total costs were 4.705 mln Euros (VWS, 2005).

Depression and anxiety in the aged

Depression and anxiety are common mental disorders among older persons living in the community (Vermeulen et al., 1994; Flint et al., 1994; Beekman et al., 1999).
In the Longitudinal Aging Study Amsterdam (LASA), carried out in the Netherlands, the overall prevalence of anxiety disorders was 10.2%, the prevalence of major depression was 2.02% and

the prevalence of minor depression was 12.9% (Beekman et al., 1998; Beekman et al., 1995).
Comorbidity of depression and anxiety was also frequently observed (Beekman et al., 2000): 47.5% of those with major depressive disorder also met criteria for anxiety disorders, whereas 26.1% of those with anxiety disorders also met criteria for major depressive disorder.
Both, depression and anxiety, in community-based studies are associated with female sex, with presence of physical illnesses and functional impairments and resulted in less well being and a higher use of health care services (Beekman et al., 1995; Beekman et al., 1997; Beekman et al., 2002; De Beurs et al., 1999).
Nursing home patients, who in majority are of female gender and have high levels of functional impairment and multiple complex somatic morbidity, may particularly be prone for developing depression or anxiety, which may result in a further reduction of well being of these patients.
Prevalence data about depression in nursing home populations, ranging from 6% to 26% for major depression and from 11% to 50% for minor depression (Jongenelis et al., 2003), support this hypothesis: much higher rates than observed in community-based studies. These prevalence data however refer to nursing homes outside the Netherlands, which may differ from the nursing homes in the Netherlands. Sound and reliable data about prevalence of depression and anxiety in Dutch nursing homes are missing. We can only rely on a pilot study in one nursing home reporting a prevalence of major depression of 16% (Falck et al., 1999).

The AGED study in nursing homes: a global description

To enhance the knowledge about depression and anxiety in nursing home patients in the Netherlands, the Amsterdam Groningen Elderly Depression (AGED) study was carried out.
In Groningen the AGED study was carried out in residential homes and focussed on depression. Results were reported in the thesis 'Depression in the elderly living in residential homes' (Eisses, 2005).
In Amsterdam the AGED study was carried out in nursing homes. Prevalence, comorbidity and risk indicators of depression and anxiety, the relationship of depression and anxiety with physical illnesses, their impact on well being and disability, and their consequence for use of health care services were studied. With regard to depression also recognition, treatment and six month follow-up was studied.
Fourteen nursing homes in the North West of the Netherlands were selected to participate. Nursing homes for specific disease categories were excluded, as were small nursing homes (<60 beds). No large reorganization or rebuilding activities were allowed because of possible influence on the mood of the respondents. Between November 1999 and May 2001, data were collected: at baseline and after six months. Informed consent was obtained from all respondents prior to inclusion. The Medical Ethical Committee of the VU University Medical Center approved the study.

Figure 1 shows the recruitment of the active study sample from the source population at baseline and follow-up using predefined criteria. The number of dropouts (550 out of 900 eligible

patients) and the reasons for dropout illustrate clearly some of the difficulties of research in the nursing home setting.
The Geriatric Depression Scale (GDS) was used for measurement of depressive symptoms (Yesavage et al., 1983). Depression and anxiety disorders (generalized anxiety disorder, panic disorder, phobias) were assessed with the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) (Wing et al., 1990; World Health Organization, 1999) and defined according to DSM-IV criteria (APA, 1994), one of the most widely used diagnostic classification systems in psychiatric epidemiological research. Using the DSM-IV classification system for defining depression and anxiety disorders however is not totally beyond discussion. Shorter and Tyrer for example disputed the separation made by the classification system between depressive disorders and anxiety (Shorter and Tyrer, 2003). Another objection that can be made against the DSM-IV classification system, also important for the present study, is that it is developed for adults between 18 to 65 years old and not for institutionalized elderly. Some authors question the value of the current criteria for elderly patients. Based on the assumption that disease symptoms often are less pronounced and less specific in the aged, they propose the use of less strict diagnostic criteria for depression and anxiety disorders in elderly populations (Heun et al, 2000). 'Sub threshold' diagnoses of depression and anxiety disorders are then distinguished in addition to DSM-IV diagnoses of depression and anxiety disorders. In this thesis this distinction is made also.

Another problem when using the DSM-IV criteria, especially important in the nursing home setting, arises when somatic comorbidity is present. Depression and anxiety disorders are likely to be underdiagnosed when symptoms that can be caused by psychiatric morbidity, such as fatigue, loss of weight and sleeping problems, always are attributed to the also present somatic morbidity. This problem will be specifically addressed in chapter 5 of this thesis.

Furthermore data were gathered about demographic, health-related, psychosocial and care-related characteristics and about quality of life and use of health care services in interviews with participants and from attending physicians and nursing home staff. Detailed descriptions of these characteristics, the used measurement instruments and the used analyses in the AGED study are given in the subsequent chapters of this thesis.

The AGED study in nursing homes: research questions addressed in this thesis

In the thesis of Jongenelis (Jongenelis, 2006) about the AGED study the focus is on depression in nursing homes (prevalence, risk factors, course, recognition, role of screening instruments).
The present thesis focuses on both anxiety and depression in nursing homes, and on their relationship with pain, well being, disability and use of health care services.

Figure 1. Recruitment of active sample (baseline and follow-up) from source population.

Source population:	**n = 1422**
Exclusion criteria:	
– short admissions (<6 months)	n = 256
– age < 55 years	n = 49
– severe cognitive impairment (mmse<15)	n = 217
Eligible:	**n = 900**
Dropouts:	
– insufficient communication (aphasic; severe hearing impairment; language barrier; voice not loud and clear enough; to slow)	n = 204
– died before interview took place	n = 58
– physically or mentally to ill	n = 46
– other reasons	n = 7
– unwilling to participate	n = 235
Active sample baseline:	**n = 350**
Exclusion criteria:	
– severe cognitive impairment (mmse<15)	n = 16
Dropouts:	
– insufficient communication	n = 2
– death	n = 45
– moved	n = 14
– physically or mentally to ill	n = 10
– other reasons	n = 8
– unwilling to participate	n = 37
Active sample follow-up (6 months):	**n = 218**

The following research questions are addressed:

1. *What is the prevalence of anxiety in elderly nursing home patients?*
   Which risk indicators of anxiety can be identified in elderly nursing home patients?

   In Chapter 2, the results of a literature review investigating the prevalence and risk indicators of anxiety among elderly patients in long term care institutions are described. A wide prevalence range of anxiety disorders was observed due to considerable differences between the included studies. Only a few studies had investigated risk indicators.
   In Chapter 3 these research questions are addressed using the nursing home data of the AGED study. Implications for clinical practice are discussed.

2. *What is the prevalence of comorbid anxiety and depression, and of 'pure' anxiety and 'pure' depression in elderly nursing home patients?*
   Are risk indicators of comorbid anxiety and depression different from risk indicators of 'pure' anxiety and 'pure' depression in elderly nursing home patients?
   Is comorbidity of anxiety and depression dependent on levels of severity of anxiety and depression in elderly nursing home patients?

   In Chapter 4 these research questions are addressed using the nursing home AGED data. In the discussion the results are related to the theoretical issue of how anxiety and depression in elderly patients are best described in classification systems: as a dimensional or as a categorical phenomenon. Possible consequences of the results for clinical practice in nursing homes are also discussed.

3. *What is the effect of attributing somatic symptoms to either somatic or psychiatric disorders on the prevalence rate of major depression, generalized anxiety disorder and panic disorder in elderly nursing home patients?*

   In Chapter 5 the issue of how to deal with the somatic symptoms that contribute to DSM-IV (American Psychiatric Association, 1994) diagnoses like major depression (MD), generalized anxiety disorder (GAD) and panic disorder (PD) is addressed.
   Should these somatic symptoms be attributed to a psychiatric disorder or should the symptoms be attributed to a physical illness? Especially when studying the prevalence of anxiety and depression in frail nursing home patients answers on these questions are important.

4. *Which relation have depression and anxiety with pain and with some important aspects of quality of life - well being and disability - in elderly nursing home patients?*
   Which consequences have depression and anxiety for use of health care services in elderly nursing home patients?

   Promoting, preserving and re-establishing quality of life is a major goal of nursing home care. These research questions therefore address the relation of depression and anxiety with pain and with some very important aspects of quality of life: (psychological) well being and disability (physical functioning). Again the nursing home data of the AGED study are used.
   In Chapter 6 the relation of depressive symptoms and anxiety symptoms and pain is studied. Because pain was a frequently present symptom, the focus of this chapter was extended. Apart form the relation of pain with depressive symptoms and anxiety symptoms, also the prevalence and six months course of pain, the recognition by nursing home physicians and the pharmacological treatment of pain in nursing home patients are described. The implications of the results for clinical practice and for the training of nursing home physicians are discussed.

   In Chapter 7 the impact of depression and anxiety on well being and disability is described. This chapter also describes the consequences of depression and anxiety for use of health care services.

5. *What is the six month-incidence of depressive symptoms in elderly nursing home patients?*
   What is the six month-outcome of depressive symptoms in elderly nursing home patients?
   Which risk indicators for incidence and persistence of depressive symptoms can be identified in elderly nursing home patients?

   In Chapter 8 the incidence and outcome of depressive symptoms in the AGED study during a six months follow-up are described. Also risk indicators for incidence and persistence of depression are assessed. Implications for clinical practice are discussed.

   Finally, in Chapter 9 the main findings and conclusions are summarized and the relevance of the present study for clinical practice and health care policy are discussed. Furthermore some recommendations for future research are made.

To the content of this thesis contributed many persons, who all are gratefully acknowledged here, and in the final part of this thesis.

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Chapter 2

Anxiety disorders in nursing homes: a literature review of prevalence, course and risk indicators

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Abstract

Psychiatric disorders such as dementia and depression are highly prevalent in nursing homes. The prevalence of anxiety disorders is less clear. Prevalence, course and risk indicators of anxiety disorders among nursing home residents were examined based on a review of the literature.

Medline and PsycINFO searches were conducted for 1966-2002. Twelve articles were considered relevant. The studies differed substantially with respect to study population, used diagnostic instruments and diagnostic criteria, and the specific anxiety disorders that were investigated.

The prevalence of anxiety disorders ranged from 0-20%. Only one study investigated the course of anxiety disorders. About 60% of the nursing home residents recovered in one year. The most important risk indicators for anxiety disorders identified were: female sex, depression, lack of social support, poor physical health and functional and cognitive impairments.

Generalization of these results to the Dutch nursing home population is restricted by the substantial heterogeneity of the studies.

Further studies are required to provide reliable estimates of prevalence, course and risk indicators of anxiety disorders among nursing home residents, using appropriate diagnostic instruments and adjusted diagnostic criteria. This will enhance detection and improve treatment of anxiety disorders among nursing home residents.

Introduction

Psychiatric disorders like dementia and depression occur frequently among nursing home residents. The last few years have therefore seen a justified rise in attention for diagnosis, counseling and treatment of nursing home patients with dementia and depressive disorders.

Much less attention is paid to another important group of psychiatric disorders, i.e. anxiety disorders. This may be caused by a lack of knowledge about extent and severity of anxiety disorders among nursing home patients, as there is no reliable information about the prevalence of anxiety disorders among nursing home patients in the Netherlands. Currently available information about anxiety among the elderly is based on studies among elderly living in the community. A large community-based study estimated the 6-month prevalence of anxiety disorders at 10.2% (Bremmer et al., 1997). We also know that anxiety disorders occur more frequently in patients with chronic diseases (Beurs de et al., 2000) and have serious consequences: they are associated with functional disability and have a negative impact on quality of life (Beurs de et al., 1999; Lenze et al., 2000; Mendlowicz and Stein, 2001).

Most nursing home patients suffer from one or more chronic diseases and almost all are seriously functionally impaired. Therefore, anxiety disorders are expected to occur frequently among nursing home patients and to cause additional suffering.

To find out what is currently known about anxiety disorders among nursing home patients (internationally) – knowledge that may be extrapolated to the situation in the Netherlands – we performed a literature review.

Research questions were: what is the prevalence and the course of anxiety (disorders) among nursing home patients? What are the risk indicators for anxiety (disorders) among nursing home patients?

Methods

In Medline and PsycINFO we searched (1966-July 2002) with (the combination of) the following text words: anxiety, anxiety disorders, fear, phobia, panic, panic attack, panic disorder, obsessive compulsive disorder, posttraumatic stress disorder, mental disorders, psychiatric disorders, psychopathology, nursing home, home for the aged, long term care facility, elderly, residential home, prevalence, cohort-study. Only articles in Dutch, English and German

were selected. Reference lists of selected articles were also searched for additional relevant studies.

Studies were included if they investigated and defined anxiety on a symptom level or on a syndrome level and if they were conducted in a nursing home-like setting (nursing home, home for the aged, long term care facility, residential home for the elderly. In the Netherlands these are: 'verpleeghuizen' and 'verzorgingshuizen'). We did not restrict inclusion to studies conducted in nursing homes but chose the wider definition of 'nursing home-like setting' for two reasons. Firstly, the number of available studies was expected to be small. Secondly, it was thought that information about anxiety disorders among elderly in other long term care institutions could possibly be used as an indication of the situation in nursing homes.

Anxiety at the symptom level (anxiety symptoms) was present if a patient reported anxiety symptoms in a standardized interview or if anxiety was measured by an observational measuring instrument. For anxiety at the syndrome level (anxiety disorders), DSM-III, DSM-III-R and DSM-IV (Diagnostic and Statistical Manual of Mental Disorders, third edition, third revised edition, fourth edition) and ICD-9 and ICD-10 (International Classification of Diseases, ninth edition, tenth edition) were used. These classification systems were chosen because valid and reliable measuring instruments were developed based on, and parallel to the development of, these systems. This enables comparison of studies that use these instruments.

The used diagnostic criteria and diagnostic instruments of each included study are described. For all included studies prevalence and, when available, course and risk indicators of anxiety (disorders), were assessed. To estimate the prevalence of anxiety disorders, data from the included studies were pooled. As we also wanted to base the estimate of the prevalence of anxiety disorders on the methodological qualities of the studies, we pooled only studies of good methodological quality.

Results

Twelve studies met our inclusion criteria. They all described the prevalence rates of anxiety disorders or anxiety symptoms in a nursing home-like setting (Rovner et al., 1986; Kay et al., 1987; Bland et al., 1988; Sandman et al., 1988; Bosma, 1990; Junginger et al., 1993; De Leo et al., 1993; Parmelee et al., 1993; Berg van den et al., 1995; Class et al., 1996; Cheok et al., 1996; Sandberg et al., 1998). One study also reported on the course of anxiety disorders (Parmelee et al., 1993). Three studies investigated risk indicators of anxiety disorders (Kay et al., 1987; De Leo et al., 1993; Parmelee et al., 1993). In table 1 the included studies are summarized.

Prevalence of anxiety disorders and anxiety symptoms

Two studies reported only on *anxiety symptoms* (Sandman et al., 1988; Sandberg et al., 1998). The prevalence of anxiety symptoms varied from 10.7% to 58.4%.

Sandman et al. (1988) reported 'daily' complaints of anxiety in 10.7%, and complaints of anxiety 'sometimes every week' in 16.8% of their study population. This population consisted of

elderly patients from several long term care institutions (hospitals were excluded). Dementia was present in 40% of the study sample.

Sandberg et al. (1998) investigated nursing home patients (66% dementia) and residents of old people's homes (28% dementia). They reported anxiety symptoms in 58.4% of the nursing home patients and in 48.5% of the old people's homes residents.

The prevalence of *anxiety disorders* varied from 0.0% to 20.0%. Pooling of the prevalence data from all studies that investigated anxiety disorders (Rovner et al., 1986; Kay et al., 1987; Bland et al., 1988; Bosma, 1990; Junginger et al., 1993; De Leo et al., 1993; Parmelee et al., 1993; Berg van den et al., 1995; Class et al., 1996; Cheok et al., 1996), resulted in an estimated prevalence of anxiety disorders of 6.7% (n = 151/2257). When pooling was restricted to nursing home populations only (4 studies: Rovner et al., 1986; Junginger et al., 1993; Class et al., 1996; Cheok et al., 1996), the resulting estimated prevalence is 6.9% (n = 25/363).

The heterogeneity of the included studies (see table 1), however, raises strong objections against this pooling of the prevalence data. The included studies are heterogeneous on several aspects (study population, used measuring instruments, used diagnostic criteria, spectrum of investigated anxiety disorders; the used kind of prevalence rate), which may have biased the estimated prevalence rate of anxiety disorders in each study.

The *study populations* were heterogeneous with respect to country (United States of America, Tasmania, Canada, Australia, Italy, the Netherlands), kind of setting (i.e. nursing home, home for the aged), selection of respondents (non selective, spontaneous, by screening with the aid of different screening instruments). Furthermore, the studies differed in terms of the sociodemographics of the populations (religion, race, income) and in the way they used data of persons with dementia/cognitive impairment. This last group was excluded completely or anxiety data were not measured in this subgroup.

The *used measurement instruments* were varied and the *used diagnostic criteria* also differed between the studies. Detection and defining of anxiety disorders was therefore not identical in the included studies.

The *spectrum of investigated anxiety disorders* was highly variable also. No single study investigated the whole spectrum of anxiety disorders and the prevalence of posttraumatic stress disorders received no attention at all. Prevalence data of the included studies therefore always referred to a specific spectrum of anxiety disorders.

And finally, the *prevalence rate* was presented in two different ways. Two studies used a 6-month prevalence (Bland et al., 1988; Bosma, 1990). The other eight studies used a point prevalence.

It is very plausible that all these aspects affected the observed prevalence rates and biased the results of the studies. Taking all these aspects into account, none of the included studies could therefore be viewed as a model-study, whose estimated prevalence rate of anxiety disorders could be used as an indication of the prevalence rate of anxiety disorders among nursing home patients in the Netherlands.

Table 1: Relevant characteristics of the included studies of prevalence, course and risk indicators for anxiety disorders.

Year of publication and author	Study population	N	Diagnostic instruments	Diagnostic criteria	Prevalence and spectrum of anxiety (disorders) (point prevalence unless another method is mentioned)
1986, Rovner	1 nursing home	50	GMSS	DSM-III	0%
1987, Kay	1 hospital for chronically ill patients; 14 nursing homes (hostel sections)	113	shortened GMSS	ICD-9	6.9% (anxiety states, phobic states, OCD)
1988, Bland	Nursing homes; auxiliary hospitals	199	MMSE DIS (version 3)	DSM-III (without hierarchical criteria)	6-month prevalence: 5.0% (phobia, panic disorder, OCD)
1988, Sandman	23 nursing homes, 36 homes for the aged, 16 somatic long-stay wards, 9 psychogeriatric wards, 9 psychiatric long-stay wards	3607	MDDAS	MDDAS (measured anxiety at symptom level)	10.7% daily anxiety at symptom level 16.8% anxiety at symptom level sometimes every week
1990, Bosma	residential homes (residents between 65-75)	64	screening with SCL-90 DIS (when SCL-90 score >110)	DSM-III	6-month prevalence: phobia : 4.7%; phobia and depressive disorder 4.7%
1993, Junginger	1 nursing home	100	SCID	DSM-III-R	20% (panic disorder 5%; agoraphobia without panic disorder 4%; simple phobia 1%; OCD 5%; GAD 6%)
1993, De Leo	residential homes	200	screening with MMSE psychiatric interview (psychiatrist) when MMSE >23	DSM-III-R	9.5% (GAD)
1993, Parmelee	1 long term care facility (nursing home, congregate housing)	994 (na 1 jaar n = 451)	checklist with anxiety symptoms based on the SADS	DSM-III-R (adapted)	3.5% (GAD or panic disorder) 13.2% subthreshold anxiety disorder
1995, Berg van den	25 residential homes	324	screening with CES-D and mmse DIS in a random sample, only when MMSE >17	DSM-III	15% (GAD, phobia, panic disorder, OCD)
1996, Class	6 nursing homes	106	modified PSE	DSM-III-R	0.9% (GAD)
1996, Cheok	5 nursing homes	107	screening with MMSE questionnaire made by Lindesay et al. (1989) based on PSE, GMSS and CARE when MMSE >17 psychiatric interview (1 psychiatrist) when scoring ≥ 5 on Lindesay questionnaire (section generalized anxiety disorder)	DSM-III-R Criteria questionnaire Lindesay et al. (1989)	3,7% DSM-III-R anxiety disorder (GAD 2.8%, panic disorder and GAD 0.9%) 14% phobia and 1.9% panic attacks (questionnaire made by Lindesay et al.(1989))
1998 Sandberg	3 nursing homes en 5 old people's homes (residents > 75)	398	OBSS	OBSS (measured anxiety at symptom level)	58.4% (nursing home); 48.5% (old people's homes) anxiety at symptom level

Notes: GMSS = Geriatric Mental Status Schedule; MMSE = Mini Mental State Examination; DIS = Diagnostic Interview Schedule; MDDAS = Multi-Dimensional Dementia Assessment Scale; CRQ = Current Resident Questionnaire; SCL-90 = Symptom Checklist (90 items); SCID = Structured Clinical Interview for DSM-III-R; SADS = Schizophrenia and Affective Disorders Schedule; CES-D = Center for Epidemiologic Studies Depression Scale; PSE = Present State Examination; CARE = Comprehensive Assessment and Referral Examination, OBSS = Organic Brain Syndrome Scale, CIS = Clinical Interview Schedule; DSM-III(-R) = Diagnostic and Statistical Manual of Mental Disorders, third (revised) edition; ICD-9 = International Classification of Diseases, ninth edition; OCD = obsessive compulsive disorder; GAD = generalized anxiety disorder.

Course of anxiety disorders

Only one study reported on the course of anxiety disorders among nursing home patients (Parmelee et al., 1993). In this study modified DSM-III-R criteria were used for diagnosing anxiety disorders (generalized anxiety disorder and panic disorder). The study also distinguished subthreshold (subsyndromal) anxiety disorders: generalized anxiety disorder or panic disorder with fewer symptoms than required for a syndromal diagnosis. Baseline and one year follow-up data about prevalence of anxiety were available for 451 of the 994 residents who were interviewed at baseline.

At one year follow-up 58.3% of patients with an anxiety disorder at baseline and 72.0% of the patients with a subthreshold anxiety disorder at baseline had no anxiety. The point-prevalence of anxiety disorders decreased from 3.5% to 3.3% and the point-prevalence of subthreshold anxiety disorders decreased from 13.2% to 7.1% during one-year follow-up. One-year incidence of anxiety disorders was 2.3% and one-year incidence of subthreshold anxiety disorders was 4.9%.

Risk indicators of anxiety disorders

Three studies investigated risk indicators of anxiety disorders (Kay et al., 1987; De Leo et al., 1993; Parmelee et al., 1993). Kay et al. (1987) found that anxiety disorders were more frequent in women than in men. De Leo et al. (1993) reported that anxiety disorders occurred more frequently in patients with depressive disorders and in patients who received less social support as measured by the Social Support Index, which measures perceived instrumental and emotional support (Surtees, 1980).

Parmelee et al. also reported that anxiety disorders were more frequent in patients with a depressive disorder and further observed an association of anxiety disorders with poor physical health, functional impairment and impaired cognitive functioning.

Discussion

The prevalence rates of anxiety reported in the included studies indicate that anxiety frequently occurs in nursing homes: anxiety symptoms as well as anxiety disorders. Pooling of prevalence data of anxiety at the syndrome level (anxiety disorders) results in an estimated prevalence of 6.7% of anxiety disorders. The reliability of this estimation can be questioned, however, as the heterogeneity of the included studies is considerable and most studies investigated only a part of the total spectrum of anxiety disorders. Moreover, cognitively impaired patients were excluded in most studies. The estimated prevalence of 6.7% can therefore only be seen as an indication of the prevalence of anxiety disorders among nursing home patients without serious cognitive impairment.

The same limitation applies to comparison with prevalence data from community-based studies.

Prevalence data about anxiety symptoms (10.7%-58.4%) involved all nursing home patients, including patients with serious cognitive impairment, but are based on just two studies.

It is remarkable that, also internationally, anxiety (disorders) among nursing home patients have so far scarcely been investigated. We found only 12 studies that could be included and the most recent one was published in 1998.

This lack of attention seems unjustified, as the observed estimated prevalence rates are not low and because underdiagnosis of anxiety disorders among nursing home patients is likely for several reasons. First of all elderly patients are not quick to consult their physician for anxiety, even when the anxiety is severe (Himmelfarb and Murrell, 1984; Bebbington et al., 2000). There are no reasons to expect nursing home patients to act differently. Secondly, underdiagnosing can be caused by 'ageism': anxiety symptoms are interpreted as ageing symptoms (Lindesay et al., 1989). Thirdly, physicians have difficulty recognizing anxiety disorders in elderly patients because of the frequently present somatic comorbidity and psychiatric comorbidity (dementia, depressive disorder) (Salzman and Lebowitz, 1991). The physician may focus his attention on this comorbidity, which may cause him to neglect the anxiety disorder. It is also possible that anxiety symptoms are - incorrectly - not attributed to an anxiety disorder but to also present comorbidity, as for example in the case of neuro-vegetative symptoms (such as palpitations, sweating, dry mouth), motor-symptoms (such as trembling, shaking, psychomotor agitation) and anxiety symptoms accompanying raised vigilance (such as irritability, sleeping problems). These symptoms can also be present in numerous somatic disorders, in dementia and in depressive disorders and may be incorrectly attributed to these disorders (Fuentes and Cox, 1997; Kogan et al., 2000).

And finally, underdiagnosing can also be caused by the currently used classification system for psychiatric disorders (DSM), which is mainly developed and validated in a population of adults and not in an elderly population. An important characteristic of the DSM-system is that number, duration and intensity of symptoms must reach a certain threshold for diagnosing a disorder. Anxiety disorders are seen as categorical phenomena: they are either present or absent. But anxiety can also be viewed as a dimensional phenomenon. Investigations among elderly in the community that found less wellbeing and more functional impairment both in patients with anxiety at a syndrome level and in patients with anxiety at a symptom level, support a more dimensional approach of anxiety (Beurs de et al., 1999; Lenze et al., 2001). These observations can be accommodated by lowering the diagnostic thresholds for elderly patients and defining subthreshold anxiety disorders (Angst et al., 1997; Papassotiropoulos and Heun, 1999; Heun et al., 2000). Parmelee et al. (1993) who distinguished anxiety at the syndrome level (3.5%) and subthreshold (subsyndromal) anxiety (13.2%) showed that subthreshold anxiety disorders occurred quite frequently.

Distinguishing subthreshold anxiety disorders also accommodates the fact that elderly patients often express less and less specific symptoms of diseases. And it may provide a solution for the problem of incorrect attribution mentioned earlier.

Only one study reported on the course of anxiety disorders among nursing home patients: a one-year follow-up (Parmelee et al., 1993). The prevalence rate proved to be stable: about 3.5%.

Nearly 60% of the patients with an anxiety disorder at baseline had no anxiety disorder at one-year follow-up. The incidence of anxiety disorders was 2.3%. The also described subthreshold anxiety disorders had a similar course but these patients developed an anxiety disorder more frequently than patients without anxiety at baseline.
More longitudinal investigations are needed to confirm the results of this study.

Three studies investigated risk indicators of anxiety disorders (Kay et al., 1987; De Leo et al., 1993; Parmelee et al., 1993). Anxiety disorders were associated with female sex, depression, less social support, cognitive impairment, functional impairment and poor physical health. These findings are in line with observations in studies among elderly living in the community (Bremmer et al., 1997; Regier et al., 1993; Forsell and Winblad, 1998). The clinical significance of most of these risk indicators is small, as the majority of nursing home patients is female, has poor physical health and considerable functional impairments. A possible exception is presence of depression: in patients with depression physicians should also focus on the presence of anxiety disorders.

More research on anxiety disorders among Dutch nursing home patients is justified and needed for reliable information about prevalence, course and risk indicators of anxiety disorders among nursing home patients in the Netherlands. Future studies should ideally choose representative study samples (including patients with more severe cognitive impairment) and use standardized measuring instruments that are appropriate for nursing home patients and are based on appropriate diagnostic criteria. The DSM-classification system for anxiety disorders may also be useful in nursing home populations when complemented with criteria for subthreshold anxiety disorders. However, specific problems remain in the diagnosis and definition/classification of anxiety (disorders) among nursing home patients with more severe dementia.
Diagnosing a DSM anxiety disorder in this group of patients is difficult as the diagnostic interview is not a reliable diagnostic instrument due to the severe cognitive impairments. Observational instruments must then be used in diagnosing, but it is impossible to define/classify anxiety disorders solely on the basis of observational data. For patients with more severe dementia the DSM-classification is therefore not an appropriate instrument when investigating anxiety. An alternative way of diagnosing anxiety in this group of nursing home patients would be to measure anxiety dimensionally (frequency, duration, intensity) with a standardized observational instrument. The Neuropsychiatric Inventory (NPI) (Dutch version also available), which contains a specific anxiety subscale, may be appropriate for this end (Cummings et al., 1994; Wood et al., 2000; Iverson et al., 2002; Kat et al., 2002).
Dimensional measurement and classification of anxiety can also be useful for decisions to start therapeutic interventions, as interventions can be linked to severity of anxiety (dimensionally measured) and for measuring the effectiveness of therapeutic interventions in a standardized way (Qazi et al., 2003).

Treatment of anxiety disorders can be done pharmacologically (i.e. serotonergic antidepressants, benzodiazepines), non-pharmacologically (i.e. cognitive behavior therapy) or a combination of both (Stanley and Beck, 2000; Weijnen and Beurs de, 2001). These treatments have been investigated and have proven to be effective in adults <65. If and to what extent they are effective in nursing home patients characterized by older age (mean age 80), somatic comorbidity and frequently by dementia, is unknown (Weijnen and Beurs de, 2001). Until nursing home-specific therapy effectiveness data become available, a well-founded choice of therapy for nursing home patients should be guided by the results of investigations in adults <65.

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Chapter 3

Prevalence and correlates of anxiety among nursing home patients

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Abstract

BACKGROUND Very little is known about the prevalence and correlates of anxiety among nursing home patients. The current knowledge is predominantly based on information from population-based studies among elderly.

METHODS Prevalence of anxiety was measured with the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) in a sample of 333 nursing home patients of somatic wards of 14 nursing homes in the Netherlands. Participants were over 55 years, had a MMSE-score >14 and were able to communicate sufficiently. Information about demographic, health-related, psychosocial and care-related characteristics was collected in interviews with participants and from attending physicians and nursing home staff.

RESULTS The prevalence of anxiety disorders was 5.7%, of subthreshold anxiety disorders 4.2% and of anxiety symptoms 29.7%.

Only health-related characteristics (MMSE-score > 23, depression, stroke) were significantly associated with anxiety disorders and subthreshold anxiety disorders.

Demographic (> 6 years education), health-related (depression, impaired vision, pain) and psychosocial characteristics (a recent negative life event) were significantly associated with anxiety symptoms. No care-related characteristics were associated with anxiety.

LIMITATIONS The studypopulation is a selective one (≥ 55 years, MMSE ≥ 15, able to communicate sufficiently). The data were collected crosssectionally.

CONCLUSIONS Anxiety disorders and anxiety symptoms occur frequently among nursing home patients and are mainly associated with health-related characteristics. Physicians should focus special attention on patients with depression or stroke.

Introduction

Very little is known about the occurrence of anxiety and anxiety disorders among nursing home patients. Previous studies, which were mostly carried out in one nursing home, showed prevalence estimates of anxiety disorders among nursing home patients varying between 0-20% (Rovner et al., 1986; Junginger et al., 1993; Parmelee et al., 1993; Cheok et al., 1996). Correlates of anxiety disorders were investigated in only one study (Parmelee et al., 1993).

The current knowledge about prevalence and correlates of anxiety disorders is therefore predominantly based on population-based studies among elderly. In these studies prevalence rates of anxiety disorders were somewhat lower for older than for younger adults (Regier et al., 1993; Flint, 1994; Vermeulen et al., 1994). A recent Dutch community-based study observed an overall prevalence of anxiety disorders among elderly of 10.2% (Beekman et al., 1998).

Female sex, living without partner, low level of education, somatic comorbidity, functional impairments, (a history of) psychiatric comorbidity and loneliness have been found to be associated with anxiety disorders among elderly in community-based studies (Regier et al., 1993; Flint, 1994; Beekman et al., 1998; Forsell and Winblad, 1998; De Beurs et al., 2000; Lenze et al., 2001). As these characteristics are ubiquitous among nursing home patients, the prevalence of anxiety disorders among nursing home patients is expected to be higher than among elderly in the community.

Important negative consequences of anxiety disorders are impaired well being (De Beurs et al., 1999) and a diminished quality of life (Mendlowicz and Stein, 2000). Early diagnosis and appropriate treatment of anxiety disorders may prevent these negative consequences.

The aim of this study was to determine the prevalence and correlates of anxiety disorders and symptoms among nursing home patients. Adequate information about prevalence rates enables planning of necessary psychiatric and psychological care and more knowledge about the correlates of anxiety among nursing home patients may enhance detection of anxiety. In addition to the prevalence of anxiety disorders, the prevalence of subthreshold anxiety disorders was investigated as previous studies indicated that application of DSM-IV criteria for anxiety disorders was not always valid and clinically relevant for elderly patients (Angst et al., 1997; Heun et al., 2000).

Methods

Study population

This study is based on data collected in the Amsterdam Groningen Elderly Depression (AGED) study (Jongenelis et al., 2004). Fourteen nursing homes in the North West of the Netherlands were selected to participate. Nursing homes for specific disease categories were excluded as were small nursing homes (<60 beds). No large reorganization or rebuilding activities were allowed because of possible influence on the mood of the respondents. To be eligible, subjects had to be aged 55 years and over, able to communicate sufficiently in the Dutch language and without severe cognitive impairment (MMSE ≥ 15) (Folstein et al., 1975). To allow a follow-up study over six months, no short admissions were enrolled in this study. All eligible patients were informed both verbally and in writing. Written informed consent was obtained from all respondents prior to inclusion. The Medical Ethical Committee of the VU University Medical Center approved the study.

From the source population for this study, 1117 nursing home patients, eventually an active sample of 350 patients could be included. 58 patients (5.2%) died before interviewing and 46 patients (4.1%) could not be interviewed because they were suffering from acute illness, terminal illness or coma. In addition, 217 patients (19.4%) were excluded because of severe cognitive dysfunction (MMSE<15) and 204 patients (18.2%) were not able to communicate due to severe hearing impairment, language barrier or being too aphasic. 235 patients (21%) refused to participate and 7 patients (0.6%) were not included for other reasons.

Complete SCAN-interview data were available for 333 patients.

Between November 1999 and May 2001, data were collected. All measurements were administrated in a face to face interview, lasting between one and three hours, spread over one to three interview sessions. Data concerning physical illness and disability were also obtained from the attending physician and nursing staff.

Measurements

Anxiety

Anxiety was measured with the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) (World Health Organization, 1999). The SCAN is a semi-structured diagnostic interview that generates diagnoses of anxiety disorders according to the DSM-IV criteria (American Psychiatric Association, 1994).

If symptoms recorded in the SCAN-interview could be attributed to somatic disorders or use of medication, they did not contribute to the diagnosis of anxiety or depression.

Anxiety disorders (generalized anxiety disorder (GAD), phobic disorders and panic disorder) were diagnosed using DSM-IV criteria (American Psychiatric Association, 1994). *Subthreshold anxiety disorders* were defined, based on criteria (see table 1) developed by Angst et al. (1997) and Heun et al. (2000). *Anxiety symptoms* were defined as presence of phobic complaints or presence of feelings of anxiety or panic; alone or concomitant with one or more physical symptoms (e.g. feeling dizzy, palpitations).

Demographic characteristics

Participant characteristics possibly associated with anxiety were divided into four groups: demographic, health-related, psychosocial and care-related factors.

Demographic characteristics including age, gender, having a partner, number of children, level of education and level of urbanization were gathered by means of a standard questionnaire.

Health-related characteristics

Cognitive functioning was assessed with the MMSE (Folstein et al., 1975). Sumscores <24 were taken to indicate the presence of cognitive impairment. *Depression (major or minor)* was measured with the SCAN (World Health Organization, 1999) using DSM-IV (research)-criteria (American Psychiatric Association, 1994).

Table 1. Criteria for subthreshold anxiety disorders.

Disorder	Criteria[a]
Subthreshold panic disorder	A subthreshold panic attack (a panic attack with one or more physical symptoms) during the last four weeks
Subthreshold agoraphobia	Unreasonable fear in places or situations from which it is difficult to leave during the last four weeks and at least some avoidance or symptoms of anxiety
Subthreshold specific phobia	Persistent fear of circumscribed stimulus during the last four weeks and at least some avoidance or consequences
Subthreshold social phobia	Persistent fear of situations in which a person is exposed to social interactions during the last four weeks and at least some avoidance or consequences
Subthreshold generalized anxiety disorder	Unrealistic anxiety or worry about two or more lifesituations during the last four week and at least one physical or vegetative symptom

a Based on criteria developed by Angst et al. (1997) and Heun et al. (2000).

Information about the presence of *physical illnesses* was obtained from the attending physician using a questionnaire containing thirteen main groups of somatic diseases. *Visual and hearing acuity* were questioned and observed in the interview with the respondent by the interviewer. The scores were dichotomized: no visual impairment versus severe visual impairment including blindness; and no hearing impairment versus severe hearing impairment (but still able to communicate). *Functional impairments* were measured using the 17 items concerning somatic autonomy of the Sickness Impact Profile 68 (SIP 68) (De Bruin, 1996) and perceived *pain* was measured using the 8 items concerning pain of the Nottingham Health Profile (Erdman et al., 1994). Sum scores were dichotomized at the median.

Psychosocial characteristics

Loneliness was measured using the 11-item Loneliness Scale (De Jong Gierveld and Van Tilburg, 1999) developed for the elderly. We used, as recommended by the authors, a cut-off score of 3 to distinguish between lonely and not lonely.

Social support was assessed with the SSL12-I questionnaire, a scale consisting of 12 items, developed and validated in the Netherlands for use in the elderly (Van Eijk et al., 1994).

Negative life events were inquired about in a single question with a yes/no response format.

Care-related characteristics

The *number of persons sharing a room* and *length of stay* in the nursing home were measured using a standard questionnaire. *Perceived inadequacy of care* was measured according to a 5-item scale derived from a Dutch Quality of Life scale designed especially for older nursing home patients (Van Campen and Kerkstra, 1998).

Statistical analyses

Prevalence rates, including 95%-confidence intervals, of anxiety disorders, subthreshold anxiety disorders and anxiety symptoms were calculated.

As a next step bivariate analyses were conducted to investigate the associations between anxiety and baseline characteristics. These analyses were carried out for two groups: (group 1) patients with anxiety disorders or subthreshold anxiety disorders, (group 2) patients with anxiety symptoms but without anxiety disorder or subthreshold anxiety disorder. Patients without anxiety served as control group in both analyses.

Continuous variables were dichotomised to enable a good comparison of outcomes (odds ratios). For multiple comparisons was not corrected statistically because of insufficient power of the study, but single findings were not overvalued.

The bivariate analyses were followed by multivariate logistic regression analyses for the same groups. Age, gender, and characteristics with statistically significant odds ratios in the bivariate analyses were entered in the multivariate analyses, using a backward stepwise logistic regression analysis, to reach the most parsimonious model for each group.

Results

Demographic and clinical characteristics are shown in table 2. Compared with national data of nursing home patients on somatic wards (Prismant, 2001), there was no significant difference in sex-distribution, but men were significantly older in the study population (77.1 vs. 73.1 year; p<0.001).

The prevalence rate of anxiety disorders (DSM-IV criteria) in the study population was 5.7% (95% CI: 3.2-8.2%). In 19 patients 24 anxiety disorders were diagnosed (see table 3). Fourteen patients had one anxiety disorder; five had two anxiety disorders. Phobias were the most prevalent anxiety disorders (3.6%), followed by panic disorder (1.5%) and generalized anxiety disorder (1.2%).

Table 2. Demographic and clinical characteristics of a sample of nursing home patients in the Netherlands (n=333).

Characteristic		N	%	Mean	SD	Range
Age				79.3	8.3	55-99
	55-79	161	48.3			
	80-99	172	51.7			
Sex	Male	104	31.2			
	Female	229	68.8			
Having a partner	Yes	98	29.4			
	No	235	70.6			
Urbanization area nursing home	Very densely urbanized	88	26.4			
	Medium densely urbanized	245	73.6			
Years of education	≤ 6 years	141	42.5			
	> 6 years	191	57.5			
Vision	Not impaired	266	79.9			
	Impaired	67	20.1			
Hearing	Not impaired	304	91.6			
	Impaired	28	8.4			
Number of physical illnesses				3.7	1.6	1-9
	< 3	141	48.1			
	≥ 3	152	51.9			
Functional impairments	Moderate	188	56.6			
	Serious	144	43.4			
Cognitive functioning (MMSE)				22.0	3.8	15-30
	Mild dysfunction (15-23)	206	61.9			
	No dysfunction (24-30)	127	38.1			
Depression (major or minor, DSM-IV)	Yes	74	22.2			
	No	259	77.8			
Length of stay	≥ 1 year	199	59.7			
	< 1 year	134	40.3			
Number of persons per chamber				2.5	1.4	0-6
	1	88	26.4			
	2	129	38.7			
	3-6	116	34.9			

Table 3. Distribution of anxiety disorders in a sample of nursing home patients in the Netherlands (n=333).

Anxiety disorder	Number of disorders[a]	Number of subthreshold disorders[b]	Number of disorders and subthreshold disorders
Panic Disorder Without Agoraphobia (DSM-IV 300.01)	4 (1 with generalized anxiety disorder)	2	6
Panic Disorder With agoraphobia (DSM-IV 300.21)	1	1	2
Agoraphobia Without History of Panic Disorder (DSM-IV 300.22)	6 (2 with social phobia, 1 with specific phobia)	2	8
Specific Phobia (DSM-IV 300.29)	7 (1 with agoraphobia without history of panic disorder, 1 with generalized anxiety disorder)	12	19
Social Phobia (DSM-IV 300.23)	2 (2 with agoraphobia without history of panic disorder)	4	6
Generalized Anxiety Disorder (DSM-IV 300.02)	4 (1 with panic disorder without agoraphobia, 1 with specific phobia)	4	8
All	24	25	49

a Comorbidity with other anxiety disorders between brackets.

b Disorders excluded.

Subthreshold anxiety disorders alone were found in 14 patients (4.2%), one of which had two subthreshold anxiety disorders. The remaining ten subthreshold disorders occurred together with full-blown anxiety disorders. In total 33 patients (9.9%; 95% CI: 6.7-13.1%) had 49 (subthreshold) anxiety disorders. Of these (subthreshold) anxiety disorders, (subthreshold) phobias occurred in 7.5% of the patients and (subthreshold) panic disorders and (subthreshold) generalized anxiety disorder each in 2.4%.

Anxiety symptoms occurred frequently. Ninety-nine patients (29.7%; 95% CI: 24.8-34.6%) had one or more of the anxiety symptoms listed in table 4. This is after excluding symptoms attributed to somatic disorders or medication. Attribution to somatic disorders or medication was seen most frequently for 'feeling dizzy, unsteady, lightheaded' (14.7%), 'dry mouth' (12.0%), 'trembling or shaking' (10.5%) and 'paresthesias' (9.3%).

Associations of baseline characteristics with (subthreshold) anxiety disorders and with anxiety symptoms are summarized in table 5. A MMSE-score >23, depression (minor or major) and stroke were significantly associated with (subthreshold) anxiety disorders in bivariate and multivariate analyses.

Presence of anxiety symptoms was significantly associated with more than six years education, depression (minor or major), impaired vision, pain and a negative life event in the past year in bivariate and multivariate analyses. A MMSE-score >23, serious functional impairments, loneliness and perceived inadequacy of care were only significantly associated with anxiety symptoms in the bivariate analysis.

Table 4. Distribution of anxiety symptoms in a sample of nursing home patients in the Netherlands (n=333).

Feelings of anxiety or panic without concomitant symptoms	7 (2.1%)
Fobic complaints without concomitant symptoms	10 (3%)

Feelings of anxiety or panic concomitant with:	Not attributed to somatic disorders or medication	Attributed to somatic disorders or medication	Absent
Feeling dizzy, unsteady, lightheaded	27 (8.1%)	49 (14.7%)	257 (77.2%)
Dry mouth	18 (5.4%)	40 (12.0%)	275 (82.6%)
Nausea or abdominal distress	30 (9.0%)	24 (7.2%)	279 (83.8%)
Apprehensive expectations, exaggerated startle response	38 (11.4%)	12 (3.6%)	283 (84.9%)
Trembling or shaking	13 (3.9%)	35 (10.5%)	285 (85.6%)
Palpitations, pounding heart, accelerated heart rate	29 (8.7%)	18 (5.4%)	286 (85.9%)
Difficulty swallowing	21 (6.3%)	23 (6.9%)	289 (86.8%)
Paresthesias (numbness or tingling sensations)	11 (3.3%)	31 (9.3%)	291 (87.4%)
Sweating	20 (6.0%)	21 (6.3%)	292 (87.7%)
Feeling of choking	19 (5.7%)	22 (6.6%)	292 (87.7%)
Chills or hot flushes	24 (7.2%)	11 (3.3%)	298 (89.5%)
Fear of dying	24 (7.2%)	11 (3.3%)	298 (89.5%)
Sensations of shortness of breath or smothering	19 (5.7%)	15 (4.5%)	299 (89.8%)
Chest pain or discomfort	16 (4.8%)	17 (5.1%)	300 (90.1%)
Derealization (feelings of unreality) or depersonalization (being detached from oneself)	16 (4.8%)	1 (0.3%)	316 (94.9%)
Fear of losing control or going crazy	11 (3.3%)	4 (1.2%)	318 (95.5%)
Other symptoms, e.g. frequent voiding	5 (1.5%)	6 (1.8%)	322 (96.7%)

Table 5. Association of baseline characteristics (Odds ratios and 95% confidence intervals) with (subthreshold) anxiety disorders and anxiety symptoms in a sample of nursing home patients in the Netherlands (n=333).

	Characteristic	OR (95% CI) for (subthreshold) anxiety disorders (n = 33) [a]		OR (95% CI) for anxiety symptoms (n = 66) [a]	
		Bivariate analysis	*Multivariate analysis[b]*	*Bivariate analysis*	*Multivariate analysis[b]*
Demographics	Age (< 80 / ≥ 80)	1.45 (0.70-3.01)		1.54 (0.89-2.67)	
	Sex (female/male)	1.79 (0.74-4.30)		1.03 (0.57-1.85)	
	Partner (yes/no)	0.92 (0.40-2.07)		1.14 (0.63-2.05)	
	Children (yes/no)	0.72 (0.31-1.71)		0.62 (0.33-1.16)	
	Education (≤ 6 / > 6 years)	1.02 (0.48-2.09)		**0.52 (0.29-0.94)**	**0.47 (0.25-0.88)**
	Urbanization (very dense/medium dense)	1.73 (0.80-3.75)		1.14 (0.61-2.11)	
Health-related characteristics	Cognitive functioning (MMSE: > 23 / ≤ 23)	**2.40 (1.15-5.02)** [c]	**3.49 (1.45-8.39)**	**1.77 (1.02-3.09)**	
	Depression (yes/no)	**6.04 (2.79-13.07)**	**6.87 (2.82-16.78)**	**2.84 (1.52-5.31)**	**2.50 (1.27-4.90)**
	Number of physical illnesses (≥ 3 / < 3)	0.80 (0.37-1.74)		1.57 (0.84-2.92)	
	Stroke (yes/no)	**2.73 (1.21-6.16)**	**2.97 (1.23-7.13)**	1.14 (0.62-2.10)	
	COPD (yes/no)	1.94 (0.82-4.57)		0.46 (0.17-1.22)	
	Impaired vision (yes/no)	1.05 (0.41-2.70)		**2.05 (1.10-3.82)**	**1.96 (1.00-3.83)**
	Impaired hearing (yes/no)	0.66 (0.15-2.92)		0.83 (0.30-2.29)	
	Functional impairments (large/moderate)	1.66 (0.80-3.45)		**1.87 (1.08-3.25)**	
	Pain (yes/no)	1.56 (0.75-3.25)		**2.01 (1.14-3.53)**	**1.94 (1.06-3.57)**
Psychosocial characteristics	Loneliness (yes/no)	1.61 (0.73-3.54)		**2.19 (1.18-4.07)**	
	Social support (yes/no)	1.47 (0.70-3.06)		0.96 (0.55-1.66)	
	Negative life event past year (yes/no)	1.27 (0.61-2.65)		**3.06 (1.67-5.63)**	**2.53 (1.34-4.79)**
Care-related characteristics	Number of persons per chamber (2-6 / 1)	0.90 (0.40-2.04)		0.78 (0.43-1.42)	
	Length of stay (> 1 year / ≤ 1 year)	1.03 (0.49-2.18)		0.97 (0.56-1.69)	
	Perceived inadequacy of care (yes/no)	1.82 (0.86-3.83)		**1.89 (1.08-3.32)**	

a controlgroup: patients without anxiety symptoms (n=234)

b age, sex, and variables with statistically significant odds ratios in the bivariate analyses were entered in the multivariate analyses, using a backward stepwise logistic regression analysis.

c Statistically significant odds ratios in bold characters

Discussion

The prevalence of anxiety disorders in the study population was 5.7%. Contrary to what was expected, this was much lower than the prevalence of 10.2% observed in a large community-based study among elderly (n=3056, 55-85 years) in the Netherlands (Beekman et al., 1998) and also lower than prevalence rates among elderly which were reported in two reviews of community-based studies (Flint, 1994; Vermeulen et al., 1994).

Differences in the diagnostic criteria used might be responsible for the observed difference in prevalence rates. In particular the DSM-IV criteria for GAD used in the present study, are stricter than DSM-III and DSM-III-R criteria for GAD used in previous population-based studies and could therefore be held responsible for a lower prevalence of GAD. But the found difference in prevalence of GAD (7.3% in the population-based study vs. 1.2% in the present study) is too large to accept this as sole explanation.

Another explanation could be that specific characteristics of the nursing home environment are responsible for the observed lower prevalence of anxiety disorders among nursing home patients. It migt be that the highly structured daily routine and the professional care, provided by well-trained multidisciplinary staff (including registered nursing home physicians and psychologists in the Netherlands), result in feelings of safety and diminish anxiety among nursing home patients. Some riskfactors for anxiety disorders in community-based studies, such as living without partner and loneliness, which were not associated with (subthreshold) anxiety disorders in the present study, may be of less importance in the nursing home because they are compensated by the specific environment.

Finally, it cannot be ruled out that the observed lower prevalence is also caused by selective study sampling. Although we are not informed about the presence of anxiety disorders and correlates among excluded patients, anxiety might be more frequently present in excluded patients with serious cognitive impairment, severe communication problems and severe physical illness.

Subthreshold anxiety disorders were observed in 4.2% of the subjects. In the DSM-system, developed for general psychiatry, classification of a disorder depends on a specified number of symptoms, duration of symptoms and the level of impairment. This will presumably underestimate the real prevalence of anxiety disorders among nursing home patients, among whom a more aspecific manifestation is likely because of the multiple comorbidity. The prevalence of (subthreshold) anxiety disorders (9.9%) is therefore probably a better reflection of clinically relevant anxiety disorders among nursing home patients than anxiety disorders according to DSM-IV criteria solely. Another reason for distinguishing subthreshold anxiety disorders is that anxiety can be seen as a continuous phenomenon instead of a categorical one, as use of DSM-IV

criteria implies. Observations made in previous studies support this: One study found that not only anxiety disorders but also anxiety symptoms are associated with increased distress and risk for developing psychiatric disorders (De Beurs et al., 1999). In a second, longitudinal study (Parmelee et al., 1993) an increased risk for transition from subthreshold anxiety disorder to anxiety disorder was observed. Accepting anxiety as a continuous phenomenon also means that there is no need to postpone therapeutic interventions until full-blown DSM-IV anxiety disorders have developed. At an earlier point on the continuum, e.g. presence of a subthreshold anxiety disorder, interventions could take place and unnecessary loss of quality of life could be prevented. The findings of the present study that (subthreshold) anxiety disorders and anxiety symptoms were both (bivariately) associated with depression and a MMSE-score > 23, but also differed for several associated characteristics, partly support this hypothesis of anxiety as a continuous phenomenon.

A MMSE-score > 23, depression and stroke were associated with the presence of (subthreshold) anxiety disorders. The strong association of anxiety with depression, co-occurrent depression was actually observed in 51.5% of the patients with a (sub threshold) anxiety disorder, is in line with observations in previous studies (Parmelee et al., 1993; Schoevers et al., 2003). The strong association might indicate that both disorders should not be considered as distinct diagnostic entities as the DSM-IV does, but rather as different representations of the same disorder (Schoevers et al., 2003) among elderly.

In contrast with Parmelee et al. we did not find a significant association of (subthreshold) anxiety disorders with impaired cognitive function, but with relatively intact cognitive functioning (Parmelee et al., 1993). Parmelee et al. included probably also patients who were more cognitively impaired (MMSE<15). These patients may have experienced more anxiety in the nursing home environment and be responsible for the observed differences. Further study is needed to clarify the precise relationship between anxiety disorders and cognitive functioning among nursing home patients.

Contrary to the results of community-based studies, there was no association of anxiety with functional impairment. Lack of contrast is presumably the cause. Functional impairments are an important reason for admission: there are no patients without functional impairments on somatic wards of nursing homes in the Netherlands.

Strengths and limitations of this study must be noted. We succeeded in including 333 nursing home patients from 14 nursing homes, a representative sample of Dutch nursing homes. We further used strict diagnostic criteria for psychiatric diagnoses (DSM-IV) and a diagnostic instrument (SCAN) that allowed attribution of anxiety symptoms to somatic disorders or medication use. The estimated prevalence of anxiety symptoms and disorders in nursing homes based on the present study will therefore be no overestimation.

There are also some limitations, which warrant comment.

Firstly, because of the cross-sectional design of this study, conclusions about causal relationships between correlates and (subthreshold) anxiety disorders and anxiety symptoms are not possible.

Secondly, the SCAN, like most other diagnostic instruments was not specifically developed for elderly (nursing home) patients. Nevertheless, as mentioned before, the SCAN has the advantage that it allows correction for anxiety symptoms due to somatic disorders or medication.

In conclusion, anxiety appears to be a common problem among elderly nursing home patients. An appropriate therapy must be started when anxiety disorders are diagnosed, because there is no reason to assume that pharmacological and non-pharmacological therapies, proven to be effective for anxiety disorders in adults, will not be fruitful in elderly patients (Stanley and Beck, 2000). Special attention should be focused on patients with depression or stroke.

Further studies are needed to investigate the course of (subthreshold) anxiety disorders among nursing home patients and to determine the optimal therapy for (subthreshold) anxiety disorders in nursing home patients.

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Chapter 4

Comorbidity of depression and anxiety in nursing home patients

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Abstract

OBJECTIVES To assess the occurrence and risk indicators of depression, anxiety, and comorbid anxiety and depression among nursing home patients and to determine whether depression and anxiety are best described in a dimensional or in a categorical classification system.

METHODS DSM and subthreshold anxiety disorders, anxiety symptoms, major and minor depression and depressive symptoms were assessed in 333 nursing home patients of somatic wards of 14 nursing homes in the north west of the Netherlands with the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) and the Geriatric Depression Scale (GDS). Comorbidity was studied along a severity gradient. Logistic regression analyses were carried out to identify demographic, health-related, psychosocial and care-related correlates of anxiety and depression.

RESULTS The prevalence of pure depression (PD) was 17.1%, of pure anxiety (PA) 4.8%, and of comorbid anxiety and depression (CAD) 5.1%. Comorbidity increased dependent on severity of both anxiety and depression. Different patterns of risk indicators were demonstrated for PA, PD and CAD for the investigated baseline characteristics.

CONCLUSIONS Comorbidity of anxiety and depression is most prevalent in the more severe depressive and anxious nursing home patients. The gradual increase of comorbidity of anxiety and depression dependent on the levels of severity of depression and anxiety suggests that for nursing home patients a dimensional classification of depression and anxiety is more appropriate than a categorical one. The observed differences in patterns of risk indicators for PA, PD and CAD support a distinguishing of anxiety and depression. Future studies are needed to assess the effect of treatment of PA, PD and CAD in nursing home patients.

Introduction

Depression and anxiety are common mental disorders among nursing home patients. The prevalence of depression is high: the estimated rate for major depression is 15.5% and for minor depression 25.7% (Jongenelis et al., 2003). Anxiety occurs less frequently than depression, but prevalence rates are still considerably high. Parmelee et al. (1993) found a prevalence of 3.5% of anxiety disorders and of 13.5% of subsyndromal anxiety disorders.

Studies, in nursing homes (Parmelee et al., 1993; De Leo et al., 1993), primary care (Beekman et al., 2000; Graaf de et al., 2002; Heun et al., 2000; Angst et al., 1997; Balkom van et al., 2000), and in psychiatric settings (Lenze et al., 2000), further reported a large overlap of depression and anxiety. The negative consequences of depression and anxiety - loss of quality of life (Mendlowicz and Stein, 2000; Beekman et al., 1997), physical disability (Lenze et al., 2001; Wells et al., 1989) and increased healthcare utilization (Beurs de et al., 1999) and mortality (Rovner, 1993) - are considerable and are most serious in patients with comorbid depression and anxiety. In addition, patients with comorbid depression and anxiety also showed a delayed and reduced response to treatment (Mulsant et al., 1996; Flint and Rifat, 1997; Dew et al., 1997; Schoevers et al., 2002).

In the DSM classification depression and anxiety are seen as distinct forms of psychopathology, although this categorical classification type has been disputed (Tyrer, 1996; Shorter and Tyrer, 2003). In a community-based study among elderly, it was recently concluded that a dimensional classification of depression and anxiety is more appropriate for elderly than a categorical one (Schoevers et al., 2003). This was based on the observation that pure depression, pure anxiety and comorbid depression and anxiety had most risk factors in common and on the fact that the degree of comorbidity of anxiety and depression was dependent on the severity of either depression or anxiety.

The current study investigates the occurrence and risk indicators of depression and anxiety among nursing home patients and whether in this population depression and anxiety are best described in a categorical or in a dimensional classification system. Two hypotheses were therefore studied. The first hypothesis was that depression and anxiety disorders are on a continuum and that diagnostic thresholds differentiate categories of pure depression, pure anxiety and comorbid depression and anxiety. These categories can be seen as representations of the same disorder with different levels of severity or in different stages of development. The second hy-

pothesis was that depression and anxiety are different entities, each associated with a specific set of risk indicators.

Methods

Study population

This study is based on data collected in the Amsterdam Groningen Elderly Depression (AGED) study (Jongenelis et al., 2004). Fourteen nursing homes in the North West of the Netherlands were selected to participate. Nursing homes for specific disease categories were excluded as were small nursing homes (<60 beds). No large reorganization or rebuilding activities were allowed because of possible influence on the mood of the respondents. To be eligible, subjects had to be aged 55 years and over, speakers of Dutch and able to communicate sufficiently, without serious hearing problems or severe cognitive impairment (Mini-Mental State Examination ≥ 15) (Folstein et al., 1975). All eligible patients were informed verbally and in writing. Written informed consent was obtained from all respondents prior to inclusion. The Medical Ethical Committee of the VU University Medical Center approved the study.

From the source population for this study, 1117 nursing home patients, eventually an active sample of 350 patients remained. 58 patients (5.2%) died before the interview could be started and 46 patients (4.1%) could not be interviewed because they were suffering from acute illness, terminal illness or coma. In addition, 217 patients (19.4%) were excluded because of severe cognitive dysfunction and 204 patients (18.2%) were not able to communicate due to severe hearing impairment, language barrier or being to aphasic. 235 patients (21%) refused to participate in this study and 7 patients (0.6%) were not included for other reasons. Complete SCAN-interview data were available of 333 patients of the remaining 350 patients: 29.8% of the source population. Between November 1999 and May 2001, data were collected. All measurements were administrated in a face-to-face interview, lasting between one and three hours, spread over one to three interview sessions. Data concerning physical illness and disability were also obtained from the attending physician and nursing staff.

Measurement instruments

Measurement of anxiety and depression

Anxiety symptoms, anxiety disorders (generalized anxiety disorder, panic disorder, phobias) and depression were measured with Schedules for Clinical Assessment in Neuropsychiatry (SCAN) (World Health Organisation, 1999). The SCAN is a semi-structured diagnostic interview including the Present State Examination (PSE) and contains sections in which DSM-IV criteria of anxiety disorders are incorporated. Trained interviewers conducted the sections 3 (concerning symptoms like worrying, nervousness), 4 (physical symptoms of anxiety, panic and phobia), 6 (depressive symptoms), 7 (concerning symptoms like loss of concentration and energy) and 8 (symptoms like weight loss, sleeping problems). If symptoms should be attributed to somatic disorders or use of medication this was recorded: these symptoms could not contribute to the

diagnosis of anxiety or depression. Attribution was a decision of the interviewer based on respondents information, information of the care personnel and chart information.

Depressive symptoms were measured with the Geriatric Depression Scale (GDS) (Yesavage et al., 1983).

Based on SCAN data and GDS data, three levels of increasing severity of anxiety and depression were defined:

1) anxiety symptoms, depressive symptoms. *Anxiety symptoms* were defined as presence of phobic complaints or presence of feelings of anxiety or panic: alone or concomitant with one or more physical symptoms of SCAN-section 4 (e.g. feeling dizzy, palpitations, sweating: see table 4). A score of ≥11 of the GDS was defined as presence of *depressive symptoms*.
2) subthreshold anxiety disorder, minor depression. *Subthreshold anxiety disorders* were defined, based on criteria (see table 1) developed by Angst et al. (1997) and Heun et al. (2000). For *minor depression* DSM-IV research criteria were used.

Table 1. Criteria for subthreshold anxiety disorders based on criteria developed by Angst et al. (1997) and Heun et al. (2000).

Disorder	Criteria
Subthreshold panic disorder	A subthreshold panic attack (a panic attack with one or more physical symptoms) during the last four weeks
Subthreshold agoraphobia	Unreasonable fear in places or situations from which it is difficult to leave during the last four weeks and at least some avoidance or symptoms of anxiety
Subthreshold specific phobia	Persistent fear of circumscribed stimulus during the last four weeks and at least some avoidance or consequences
Subthreshold social phobia	Persistent fear of situations in which a person is exposed to social interactions during the last four weeks and at least some avoidance or consequences
Subthreshold generalised anxiety disorder	Unrealistic anxiety or worry about two or more life-situations during the last four week and at least one physical or vegetative symptom

3) DSM anxiety disorder, major depression. DSM *anxiety disorders* and *major depression* were diagnosed using DSM-IV criteria (American Psychiatric Association, 1994).

These levels of severity were mutually exclusive. For example, a patient with a DSM anxiety disorder was not classified as a patient with a subthreshold anxiety disorder or as a patient with anxiety symptoms.

Measurement of demographic characteristics

Participant characteristics that might be associated with anxiety and depression were divided into four main groups: demographic, health-related, psychosocial and care-related.

Demographic characteristics including age, gender, having a partner, number of children, education and urbanization were gathered using a standard questionnaire. Age was dichotomised on the median: 80 years or older versus younger than 80 years. The number of children was dichotomised in no children versus one or more children. Education was dichotomised in 6 years or more versus less than 6 years of education. Urbanization was dichotomised in very dense (2500 addresses per square kilometre) versus medium dense urbanization (1000-2500 per square kilometre). There were no low urbanization areas.

Measurement of health-related characteristics

Cognitive functioning was assessed with the Mini-Mental State Examination (MMSE) (Folstein et al., 1975). Patients with MMSE scores <15 were excluded and sum scores were further dichotomised: a score between 15 and 23 referred to the presence of cognitive impairment.
Information about the presence of *physical illnesses* was obtained from the attending physician using a questionnaire containing thirteen main groups of diseases. *Visual and hearing acuity* were questioned and observed in the interview with the respondent by the interviewer. The scores were dichotomised: no visual impairment versus severe visual impairment including blindness; and no hearing impairment versus severe hearing impairment (but still able to communicate).
Functional impairments were measured using the 17 items concerning somatic autonomy of the Sickness Impact Profile 68 (SIP 68) (Bruin de, 1996) and perceived *pain* was measured using the 8 items concerning pain of the Nottingham Health Profile (Erdman et al., 1994). Sum scores were dichotomised on the median.

Measurement of psychosocial characteristics

Loneliness was measured using the Loneliness Scale developed for the elderly (Jong Gierveld de et al., 1999). This self-report scale was administered as recommended by the authors in a face-to-face interview. The sum score varies between 0 (not lonely at all) and 11 (severely lonely). We used 3 as the recommended cut off score to distinguish between lonely / not lonely.
Social support was assessed with the Social Support List-Interaction version 12-I (SSL12-I), developed and validated in the Netherlands, consisting of 12 items meant for use in the elderly (Eijk van et al., 1994). Dichotomization of sum scores ranging between 12 (low social support) and 48 (high social support) was carried out on the median.
Negative life events in the past year were recorded as a single question with a yes/no response format.

Measurement of care-related characteristics

The number of persons sharing a room and length of stay in the nursing home were measured using a standard questionnaire and were dichotomised into one/more than one person per room and into a length of stay of shorter than one year/one year or longer.
Perceived inadequacy of care was measured by a 5 item scale with a yes / no format constructed out of 12 items concerning perceived care and autonomy from a Dutch Quality of Life scale

designed especially for older nursing home patients (Campen van and Kerkstra, 1998). Dichotomization was based on the median.

Data analyses

Baseline sample characteristics and prevalence of DSM anxiety disorders, subthreshold anxiety disorders, anxiety symptoms, major depression, minor depression and depressive symptoms were assessed. Co-occurrence of depression and anxiety was determined by cross-tabulation of major depression and anxiety of increasing level of severity and by cross-tabulating DSM anxiety disorder and depression of increasing levels of severity. When co-occurrence of depression and anxiety was found to be dependent on the levels of severity of anxiety and depression this could be regarded as a support for the hypothesis that depression and anxiety disorders are on a continuum. The Mantel Haenszel test for linear by linear association was used to determine the statistical significance of increasing co-occurrence.
As a next step bivariate analyses were conducted to investigate the associations between risk indicators and pure anxiety, pure depression and comorbid anxiety and depression. For this analysis three groups were distinguished. (1) A pure anxiety group (PA): patients with DSM or subthreshold anxiety disorder without major or minor depression. (2) A pure depression group (PD): patients with major or minor depression without DSM or subthreshold anxiety disorder. (3) A comorbid anxiety and depression group (CAD): patients with co-occurrent major or minor depression and DSM or subthreshold anxiety disorder.
Before analysing, the continuous variables were dichotomised to enable a good comparison of outcomes (odds ratios). No statistical correction was made, because of insufficient power, but single findings were not overvalued.
Because dichotomization of continuous variables may result in loss of information, the bivariate analyses were also done without dichotomising continuous variables.
This re-analysis resulted only for pure anxiety in a small change: the dichotomized MMSE score was not significantly associated with pure anxiety, but the continuous MMSE-score was.
The bivariate analyses were followed by multivariate logistic regression analyses for the same three groups. These analyses were done to investigate whether PD, PA and CAD should be regarded as different diagnostic categories, each associated with a category-specific set of risk indicators. Age, gender and baseline characteristics that were statistically significant ($p<0.05$) in the bivariate analyses, were included in backward stepwise logistic regression analyses with a p-out > 0.05 to reach the most parsimonious model for each diagnostic category.

Results

Sample characteristics

Demographic and clinical characteristics are shown in table 2. About two thirds of the sample was female. Their mean age was 79.3 (SD 8.3) years. The majority of the participants had cognitive impairments. More than half of the respondents did not have a partner, were insti-

tutionalised for over a year and had had more than 6 years of education. Only a minority had severe hearing or visual impairments. The age and sex distribution of the study population was compared with national data of nursing home patients of somatic wards (Prismant, 2001). There was no significant difference in sex, but men were statistically older in the study population (77.1 vs. 73.1 year; p<0.001).

The prevalence of major and minor depression and depressive symptoms, and of DSM and subthreshold anxiety disorders and anxiety symptoms has been described elsewhere (Jongenelis et al., 2004; Smalbrugge et al., 2005). Depression was present in 22.2% (n=74): 8.1% (n=27) major depression and 14.1% (n=47) minor depression. A DSM anxiety disorder was observed in 5.7% (n=19) and a subthreshold anxiety disorder in 4.2% (n=14). Comorbid anxiety and depression (CAD) was present in 5.1% (n=17): in 51.5% of the patients with a DSM or subthreshold anxiety disorder and in 23.0% of the patients with a major or minor depression. Pure anxiety (PA) was found in 4.8% (n=16) and pure depression (PD) in 17.1% (n=57).

Comorbidity associated with levels of severity of anxiety or depression

Three levels of depression (major depression, minor depression and GDS ≥11) and anxiety (DSM anxiety disorder, subthreshold anxiety disorder and anxiety symptoms) were distinguished. For each of these levels the degree of comorbidity with either DSM anxiety disorders or with major depression was calculated. The data summarized in table 3 express that comorbidity of depression and anxiety did statistically significant increase dependent on the levels of severity of anxiety and depression.

Risk indicators of PA, PD and CAD

In table 4 (bivariate analyses) and 5 (multivariate analyses) the associations of baseline characteristics with PD, PA and CAD are given.

Table 2. Demographic and clinical characteristics of a sample of nursing home patients in the Netherlands (n=333).

Characteristic		N	%
Age (mean 79.3; SD 8.3; range:55-99)	55-79	161	48.3
	80-99	172	51.7
Sex	Male	104	31.2
	Female	229	68.8
Having a partner	Yes	98	29.4
	No	235	70.6
Years of education	≤ 6 years	141	42.5
	> 6 years	191	57.5
Vision	Not impaired	266	79.9
	Impaired	67	20.1
Hearing	Not impaired	304	91.6
	Impaired	28	8.4
Number of physical illnesses (mean 3.7; SD 1.6; range 1-9)	< 3	141	48.1
	≥ 3	152	51.9
Functional impairments	large	144	43.4
	moderate	188	56.6
Cognitive functioning (MMSE) (mean 22.0; SD 3.8; range 15-30)	Mild dysfunction (15-23)	206	61.9
	No dysfunction (24-30)	127	38.1
Length of stay	≥ 1 year	199	59.7
	< 1 year	134	40.3
Number of persons per chamber (mean 2.5; SD 1.4; range 0-6)	1	88	26.4
	2	129	38.7
	3-6	116	34.9
Depression	None	179	53.7
	Depressive symptoms (GDS ≥ 11)	80	24.0
	Minor depression	47	14.1
	Major depression (DSM-IV)	27	8.1
Anxiety	None	234	70.3
	Anxiety symptoms	66	19.8
	Subthreshold anxiety disorder	14	4.2
	Anxiety disorder (DSM-IV)	19	5.7

Table 3. Comorbidity of major depression and DSM anxiety disorder dependent on levels of severity of anxiety and depression in a sample of nursing home patients in the Netherlands (n=333).

Major depression in anxiety	Percentage with comorbid major depression#
No anxiety symptoms (234)	3.4%
Anxiety symptoms (66)	10.6%
Subthreshold anxiety disorder (14)	28.6%
DSM anxiety disorder (19)	42.1%

Mantel Haenszel test for linear association 45.54; df 1; p<0.0001

DSM anxiety disorder in depression	Percentage with comorbid DSM anxiety disorder#
No depressive symptoms (179)	1.1%
Depressive symptoms (80)	6.3%
Minor depression (47)	8.5%
Major depression (27)	29.6%

Mantel Haenszel test for linear association 29.58; df 1; p<0.0001

Table 4. Association of baseline characteristics (Odds ratios and 95% confidence intervals) with pure depression (PD), pure anxiety (PA) and comorbid anxiety and depression (cad) in bivariate analyses.

Characteristic*	OR (95% CI) for PD¶ (n=57)	OR (95% CI) for CAD¶ (n=17)	OR (95% CI) for PA¶ (n=16)
Demographics			
Age (≥80 / <80)	1.64 (0.89-3.02)	1.11 (0.40-3.07)	**0.29 (0.10-0.87)#**
Sex (female/male)	0.61 (0.32-1.14)	1.91 (0.52-6.94)	1.23 (0.38-4.01)
Partner (no/yes)	0.92 (0.47-1.82)	1.68 (0.46-6.14)	0.60 (0.21-1.75)
Children (no/yes)	1.34 (0.64-2.81)	2.47 (0.84-7.25)	0.65 (0.14-3.01)
Education (≤6 / > 6 years)	0.75 (0.40-1.39)	1.44 (0.53-3.93)	0.77 (0.27-2.22)
Urbanization (very strong/medium-strong)	1.47 (0.75-2.88)	1.74 (0.60-5.03)	1.91 (0.65-5.62)
Health-related			
Cognitive functioning (mmse : >23 / ≤23)	0.67 (0.35-1.30)	1.53 (0.56-4.18)	2.87 (0.99-8.30)
Number of physical illnesses (≥3 / <3)	1.36 (0.70-2.65)	1.04 (0.35-3.13)	0.70 (0.24-2.06)
Stroke (yes/no)	1.71 (0.87-3.34)	**4.65 (1.39-15.58)**	2.79 (0.94-8.29)
COPD (yes/no)	1.19 (0.53-2.70)	1.72 (0.50-5.90)	2.15 (0.68-6.80)
Impaired vision (yes/no)	**2.57 (1.24-5.30)**	0.81 (0.17-3.77)	2.02 (0.60-6.81)
Impaired hearing (yes/no)	0.76 (0.24-2.41)	1.34 (0.28-6.48)	- **
Functional impairments (serious/moderate)	1.41 (0.76-2.61)	2.57 (0.93-7.14)	1.40 (0.49-3.97)
Pain (yes/no)	1.28 (0.70-2.36)	**3.41 (1.15-10.16)**	1.11 (0.39-3.12)
Psychosocial			
Loneliness (yes/no)	**6.07 (2.79-13.24)**	**8.54 (1.89-38.63)**	1.14 (0.41-3.19)
Social support (no/yes)	**2.16 (1.15-4.08)**	1.98 (0.70-5.63)	**0.25 (0.02-0.91)**
Negative life event past year (yes/no)	**2.97 (1.56-5.65)**	1.54 (0.56-4.21)	1.76 (0.62-4.97)
Care-related			
Number of persons per chamber (2-6/1)	0.83 (0.42-1.65)	1.52 (0.41-5.56)	0.54 (0.19-1.59)
Length of stay (> 1 year/ ≤ 1 year)	0.66 (0.36-1.23)	0.85 (0.31-2.37)	1.00 (0.34-2.89)
Lack of adequate care (yes/no)	**2.73 (1.45-5.14)**	**3.93 (1.32-11.73)**	1.64 (0.58-4.60)

* first category =1; second category = 0, ¶ control group: patients without anxiety symptoms or depressive symptoms (n=155)
# Statistically significant odds ratios in bold characters , ** there was no PA in patients with impaired hearing

Table 5. Association of baseline characteristics (Odds ratios and 95% confidence intervals) with pure depression (PD), pure anxiety (PA) and comorbid anxiety and depression (CAD) in multivariate logistic regression analyses.[$]

Characteristic*		OR (95% CI) for PD (n = 57)[¶]	OR (95% CI) for PD (n = 17)[¶]	OR (95% CI) for PD (n = 16)[¶]
Demographics	Age (≥ 80 / < 80)	0.47 (0.23-0.96)		0.27 (0.09-0.84)
	Sex (female/male)			
Health-related	Stroke (yes/no)			
	Impaired vision (yes/no)	2.30 (1.02-5.22)		
	Pain (yes/no)		4.59 (1.14-18.56)	
Psychosocial	Loneliness (yes/no)	7.23 (3.09-16.92)	12.79 (1.48-102.15)	
	Social support (no/yes)			0.23 (0.06-0.87)
	Negative life event past year (yes/no)	2.74 (1.35-5.55)		
Care-related	Lack of adequate care (yes/no)		5.93 (1.21-29.12)	

* first category =1; second category = 0

$ age, sex, and variables with statistically significant odds ratios in the bivariate analyses were entered in the multivariate analyses, using a backward stepwise logistic regression analysis, p-out > 0.05.

¶ control group: patients without anxiety symptoms or depressive symptoms (n=155)

PD was in the bivariate analyses significantly associated with impaired vision, loneliness, lack of social support, a negative life event in the past year and perceived inadequacy of care. In the multivariate analysis the association remained significant for impaired vision, loneliness and a negative life event in the past year and was also significantly associated with age < 80.

PA was in bivariate and multivariate analyses significantly associated with age below 80 years and presence of social support.

CAD was in bivariate analyses significantly associated with stroke, pain, loneliness and perceived inadequacy of care. In the multivariate analysis CAD was still significantly associated with pain, loneliness and perceived inadequacy of care.

In the multivariate analyses the characteristics associated with PD, CAD and PA were for the most part different. Only loneliness was associated both with PD and CAD and age < 80 with PA and PD.

Discussion

The prevalence of depressive disorders (major and minor depression) in the study population was 22.2% and the prevalence of DSM and subthreshold anxiety disorders was 9.9%. Comorbid anxiety and depression (CAD) was present in 5.1%. Comparison with previous studies among elderly is possible for the prevalence of major depression (8.1%) and DSM anxiety disorders (5.7%). In accordance with earlier studies in long term care settings (Parmelee et al., 1993; Bosma, 1990), the present study observed a higher prevalence of major depression and a lower prevalence of DSM anxiety disorders than in community-based studies (Beekman et al., 2000; Lindesay et al., 1989) . Some specific characteristics of the nursing home environment might be responsible for this. It seems likely that the highly structured daily routine in nursing homes and the professional care, provided by well-trained multidisciplinary staff, result in feelings of safety and diminish feelings of anxiety and occurrence of anxiety disorders. At the same time this highly structured environment is likely to restrict self-activity and opportunities to make choices with possible negative consequences as apathy and depression.

In agreement with previous investigations in long term care settings (Parmelee et al., 1993; Bosma, 1990), we observed that CAD was about two times more frequent among nursing home patients with DSM or subthreshold anxiety disorders than among nursing home patients with major or minor depression (51.5% vs. 23.0%).

In community-based studies (Lindesay et al., 1989; Regier et al., 1993; Kessler et al., 1996) however an opposite pattern of comorbidity of anxiety disorders and depression was seen in the elderly as well as in adults aged 18-64 years: CAD was about two times more frequent among patients with depressive disorders than among patients with anxiety disorders. A satisfying explanation for this reverse pattern could not be identified.

To investigate whether anxiety and depression among nursing home patients are best described in a dimensional or in a categorical classification system, two hypotheses were studied. The first was that depression and anxiety are on a continuum. The second was that depression and anxiety are different diagnostic entities each having specific risk factors.

For the first hypothesis, it was analysed whether the prevalence of major depression increased in parallel with increasing levels of severity of anxiety and whether the prevalence of DSM anxiety disorder increased in parallel with increasing levels of severity of depression. This would support the hypothesis that depression and anxiety are on a continuum and may be seen as manifestations of the same underlying condition, which are co-occurring more frequently with increasing severity of this underlying condition. The results presented in table 3 showed indeed a statistically significant increase. Because this statistical analysis concerned only the main effect, we conducted also posthoc pair-wise analyses (not shown) which were mostly significant (9 out of 12 pair-wise analyses).

The findings of the present study in the nursing home setting are in accordance with the observations of Schoevers et al. (2003) among elderly living in the community, who found a similar increase in comorbid anxiety and depression dependent on the level of severity of either anxiety or depression.

For the second hypothesis significant associations of baseline characteristics with pure anxiety (PA), pure depression (PD) and comorbid anxiety and depression (CAD) were assessed. PA, PD and CAD clearly showed different patterns of risk indicators. PD and CAD shared only 'loneliness' as a risk indicator; PD and PA shared only an age below 80 as a risk indicator.
Other comparable studies in the nursing home setting are not available, but results of similar assessments in community-based studies differ from each other. Beekman et al. (2000) found different risk-patterns for PA, PD and CAD, but Schoevers et al. (2003) observed a large overlap in risk-patterns between PA, PD and CAD.
The observed differences in associations with baseline characteristics in the present study suggest that CAD, PA and PD should be regarded as different diagnostic entities in the nursing home. This seems to contradict that anxiety and depression are manifestations of the same underlying condition as was concluded based on the support we found for the first hypothesis, but does not necessarily do so. There might well be one underlying condition that may be (strongly) associated with genetic and other not yet identified factors. Interaction of these genetic and other unidentified factors with the observed associated factors in the present study, may result in the three distinguished categories: PA, PD and CAD. Kendler et al. (1992, 1996) earlier indeed provided evidence that the same genes play a role in the development of major depression and generalized anxiety disorder. Based on this knowledge the observed differential risk patterns seem more important for clinical reasons such as identifying the more severe cases (CAD), then for nosological reasons.
There are some limitations of the present study, which must be mentioned. Firstly, the study population is a selective one. Serious cognitive impairment (MMSE <15), speech and language problems and severe physical illness were exclusion criteria. Generalizing the results to nursing home patients with these characteristics is probably limited.
Secondly, because of the cross-sectional design of this study, conclusions about causal relationships between associated variables and PD, PA and CAD are not possible.
Thirdly, the numbers of patients with PA and CAD are small. This is reflected by the wide 95% confidence intervals we found for the odds ratios of the significantly associated baseline characteristics with PA and CAD. The observed patterns of risk indicators should therefore be interpreted with caution.

Conclusions

The present study demonstrates that comorbid anxiety and depression is most prevalent in the more severe depressive and anxious nursing home patients. A gradual increase of major depression in parallel with increasing levels of severity of anxiety and a gradual increase of DSM anxiety disorder in parallel with increasing levels of severity of depression is observed. This suggests that for nursing home patients a dimensional classification of depression and anxiety is more appropriate than a categorical one.

The observed differences in patterns of risk indicators for PA, PD and CAD have probably more value for clinical practice than for reasons of nosology. They may be of help to identify the more severe forms of psychopathology, such as comorbid anxiety and depression.
Future, longitudinal, studies are needed to assess the exact value of the risk factors associated with PA, PD and CAD and the effect of treatment of PA, PD and CAD in nursing home patients.

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Chapter 5

The effect of somatic symptom attribution on the prevalence rate of depression and anxiety among nursing home patients

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Abstract

BACKGROUND Validity of diagnostic psychiatric instruments for depression and anxiety disorders may be compromised among patients with complex physical illness and disability.

OBJECTIVES To determine the effect attributing somatic symptoms of depression and anxiety to either somatic or psychiatric disorder on the prevalence rate of depression and anxiety in a nursing home population.

METHODS Symptoms of major depression (MD), generalized anxiety disorder (GAD) and panic disorder (PD) were measured using the Schedules for Clinical Assessment in Neuropsychiatry (SCAN). Somatic symptoms of MD, GAD and PD were attributed to somatic causes when the interviewer was not sure about a psychiatric cause. To analyze the effect of this attribution on the prevalence rate of MD, GAD and PD, a sensitivity analysis was undertaken in which symptoms which were attributed to somatic causes were recoded as symptoms attributed to psychiatric disorder. Prevalence rates of MD, GAD and PD were calculated before and after recoding.

RESULTS The prevalence of MD after recoding rose from 7.5% to 8.1%; the prevalence of GAD did not change; the prevalence of PD rose from 1.5% to 1.8%.

CONCLUSIONS Attribution of somatic symptoms to either somatic or psychiatric disorder when the interviewer was not sure about a psychiatric cause of the somatic symptoms had only a very modest effect the prevalence rate of major depression, generalized anxiety disorder and panic disorder in a nursing home population.

Introduction

One of the major problems in epidemiological psychiatric studies which investigate the prevalence of depression and anxiety disorders among elderly is how to deal with the somatic symptoms that contribute to DSM-IV (American Psychiatric Association, 1994) diagnoses like major depression (MD), generalized anxiety disorder (GAD) and panic disorder (PD). Should these somatic symptoms be attributed to a psychiatric disorder or should the symptoms be attributed to a physical illness?

Standardized diagnostic instruments such as the Diagnostic Interview Schedule (DIS) (Robins et al., 1981) and the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) (World Health Organization, 1999) offer the possibility to distinguish between psychiatric and somatic attributions of somatic symptoms. Symptoms attributed to somatic disorders then do no longer contribute to psychiatric diagnoses.

In the DIS, attribution depends solely on respondents' self reports, which may lead to under diagnosing of psychiatric diagnoses in elderly populations because older persons are more likely to attribute somatic symptoms to somatic causes than to psychiatric causes (Fogel and Fretwell, 1985; Snowdon, 1990; Harper et al., 1990). In two community-based studies, using the DIS, it was indeed observed that attribution of somatic symptoms to somatic causes increased with age and that attribution to psychiatric causes decreased (Knauper and Wittchen, 1994; Heithoff, 1995).

In this study the SCAN was used in a nursing home population. In the SCAN, attribution is a decision of the interviewer and depends on anamnestic information (interview: self report) together with additional information (i.e. from medical chart: medical history, medication). In frail nursing home patients with multiple chronic somatic morbidity this attribution decision often cannot be made beyond doubt.

Information about the effect of this often doubtful attribution on the prevalence rate of MD, GAD and PD in nursing home patients is lacking, although important for epidemiological psychiatric research as well as for clinical practice in nursing homes.

This study therefore investigated the effect attributing somatic symptoms to either somatic or psychiatric disorders may have on the prevalence rate of MD, GAD and PD.

Methods

Study population

This study is based on data collected in the Amsterdam Groningen Elderly Depression (AGED) study (Jongenelis et al., 2004). Fourteen nursing homes in the North West of the Netherlands were selected to participate. Nursing homes for specific disease categories were excluded as were small nursing homes (<60 beds). No large reorganization or rebuilding activities were allowed because of possible influence on the mood of the respondents. To be eligible, subjects had to be aged 55 years and over, speakers of Dutch and able to communicate sufficiently, without serious hearing problems or severe cognitive impairment (Mini-Mental State Examination ≥ 15) (Folstein et al., 1975). All eligible patients were informed verbally and in writing. Informed consent was obtained from all respondents prior to inclusion. The Medical Ethical Committee of the VU Medical Center approved the study.

From the source population (696 nursing home patients who met inclusion criteria) eventually an active sample of 350 patients remained who participated in the baseline data-collection. 58 patients (8.3%) died before the interview could be started and 46 patients (6.6%) could not be interviewed because they were mentally or physically too ill to be interviewed. 235 patients (33.8%) refused to participate in his study and 7 patients (1.0%) were not included for other reasons.

Complete SCAN-interview data were available of 333 patients of the remaining 350 patients: 29.8% of the source population.

Between November 1999 and May 2001, data were collected. All measurements were administrated in a face to face interview, lasting between one and three hours, spread over one to three interview sessions.

Instruments

The SCAN, a semi-structured diagnostic interview developed by the World Health Organization, including the Present State Examination (PSE), was used to measure depressive and anxiety symptoms (World Health Organization, 1999). It contains sections in which DSM-IV criteria of depression and anxiety disorders are incorporated (American Psychiatric Association, 1994). Trained interviewers conducted the sections 3 (symptoms like worrying, nervousness), 4 (symptoms of anxiety, panic and phobia) 6 (depressive symptoms), 7 (symptoms like loss of concentration and energy) and 8 (symptoms like weight loss, sleeping problems).

If somatic symptoms were attributable to somatic disorders (physical illness or use of medication) this was registered by the interviewer. The interviewer used interview information, chart information and information provided by care-personnel for the attribution-decision. In the original SCAN-procedure symptoms are only attributed to somatic disorder when the interviewer is convinced about a somatic cause. However, in the nursing home this procedure was judged to be less appropriate, as residents are selected to have complex multimorbidity. In order to arrive at conservative estimates of the prevalence of depressive and anxiety disorders, somatic symptoms were also attributed to a somatic disorder, when the interviewer was unsure about the attribution. This modified attribution further offered the opportunity to quantify the

amount of diagnostic doubt and its effect on prevalence rate of MD, GAD and PD in nursing home populations.

Being convinced or being in doubt about attribution of somatic symptoms to somatic causes was not recorded separately, but interviewers mentioned in research discussions that in the majority of the attribution decisions there was doubt about whether to attribute a somatic symptom to a psychiatric cause or to a somatic cause.

Somatic symptoms were coded into four categories:

0) symptom not present
1) symptom present, but below threshold for clinical relevance
2) symptom present, but attributable to somatic causes (physical illness or use of medication)
3) symptom present and attributable to psychiatric causes

Analyses

For diagnosing major depression (MD), generalized anxiety disorder (GAD) or panic disorder (PD) the DSM-IV criteria require presence of several somatic symptoms (American psychiatric Association, 1994). Criterion A for major depression includes significant change of weight or appetite, insomnia or hypersomnia, psychomotor agitation or retardation, fatigue or loss of energy and diminished ability to think or concentrate. Criterion C for generalized anxiety disorder partly includes the same symptoms, but also irritability and muscle tension. Criterion A1 for panic disorder includes the somatic symptoms of a panic attack: palpitations, sweating, trembling, shortness of breath, feeling of choking, chest pain, nausea, feeling dizzy, paresthesias and chills or hot flushes.

To assess the effect attributing of these symptoms to somatic disorder may have had on the prevalence of MD, GAD and PD, the symptoms originally scored 2 were recoded into score 3. The next step was to calculate the prevalence of MD, GAD and PD (with and without agoraphobia) for the dataset with the originally coded symptoms and for the dataset with the recoded symptoms. This is a sensitivity analysis, showing the upper limit of the effect misclassification of symptoms may have had.

Results

The study-sample consisted of 333 nursing home patients. Table 1 shows the demographic and clinical characteristics of the population. Their mean age was 79.3 years and 68.8% were women. In more than 50% 3 or more physical illnesses were present, all had moderate to large functional impairments and in 61.9% the MMSE-score varied between 15 to 23.

In table 2 the prevalence of symptoms attributed to somatic causes and of symptoms attributed to psychiatric causes is summarized (somatic symptoms of criterion A for MD, criterion C for GAD and criterion A1 for PD). Somatic symptoms of MD and GAD were predominantly attributed

to psychiatric disorder, whereas somatic symptoms of PD more often were attributed to somatic disorder.

Using the original data, a prevalence of 7.5% (95% CI: 4.7%-10.3%) (n=25) was found for MD, a prevalence of 1.2% (n=4) was found for GAD and a prevalence of 1.5% (95% CI: 0.2%-2.8%)(n=5) was found for PD.

Reattributing symptoms to psychiatric disorders did increase the prevalence of MD to 8.1% (95% CI: 5.2%-11%)(n=27). The prevalence of GAD did not change and the prevalence of PD rose to 1.8% (95% CI: 0.4%-3.2%)(n=6).

Table1. Demographic and clinical characteristics of a sample of nursing home patients in the Netherlands (n=333).

Characteristic		N	%
Age (mean 79.3; SD 8.3; range:55-99)	55-79	161	48.3
	80-99	172	51.7
Sex	Male	104	31.2
	Female	229	68.8
Having a partner	Yes	98	29.4
	No	235	70.6
Years of education	≤ 6 years	141	42.5
	> 6 years	191	57.5
Vision	Not impaired	266	79.9
	Impaired	67	20.1
Hearing	Not impaired	304	91.6
	Impaired	28	8.4
Number of physical illnesses (mean 3.7; SD 1.6; range 1-9)	< 3	141	48.1
	≥ 3	152	51.9
Functional impairments	large	144	43.4
	moderate	188	56.6
Cognitive functioning (MMSE) (mean 22.0; SD 3.8; range 15-30)	Mild dysfunction (15-23)	206	61.9
	No dysfunction (24-30)	127	38.1
Length of stay	> 1 year	199	59.7
	≤ 1 year	134	40.3

Table 2. Prevalence of somatic symptoms ('symptoms attributed to psychiatric causes' or 'symptoms attributed to somatic causes') of major depression, generalized anxiety disorder and panic disorder in a sample of nursing home patients in the Netherlands (n=333).

Somatic symptoms of major depression and generalized anxiety disorder	Symptoms attributed to psychiatric causes N (%)	Symptoms attributed to somatic causes N (%)
Significant change of weight or appetite	51 (15.3%)	1 (0.3%)
Sleeping problems (insomnia or hypersomnia)	94 (28.2%)	4 (1.2%)
Psychomotor agitation or retardation	30 (9.0%)	11 (3.3%)
Fatigue or loss of energy	64 (19.2%)	23 (6.9%)
Diminished ability to think or concentrate, indecisiveness	25 (7.5%)	3 (0.9%)
Irritability	16 (4.8%)	0 (0%)
Muscle tension	21 (6.3%)	20 (6.0%)
Somatic symptoms of panic disorder		
Palpitations, pounding heart	29 (8.7%)	18 (5.4%)
Sweating	20 (6.0%)	21 (6.3%)
Trembling or shaking	13 (3.9%)	35 (10.5%)
Shortness of breath	19 (5.7%)	15 (4.5%)
Feeling of choking	19 (5.7%)	22 (6.6%)
Chest pain or discomfort	16 (4.8%)	17 (5.1%)
Nausea or abdominal distress	30 (9.0%)	24 (7.2%)
Feeling dizzy, unsteady, lightheaded, or faint	27 (8.1%)	49 (14.7%)
Paresthesias	11 (3.3%)	31 (9.3%)
Chills or hot flushes	24 (7.2%)	11 (3.3%)

Discussion

The present study examined the effect attributing somatic symptoms of depression and anxiety to either somatic or psychiatric disorder may have on the estimates of prevalence of depression and anxiety in nursing home patients. Results showed that attribution of symptoms to somatic disorders occurred frequently, although much less frequently for symptoms of MD and GAD than for symptoms of panic disorder.

Recoding of symptoms attributed to somatic disorders into symptoms attributed to psychiatric disorder led to only very modest increase in prevalence rates of MD (7.5% to 8.1%) and PD (1.5% to 1.8%). The prevalence rate of GAD (1.2%) remained unchanged.

It was remarkable that the recoding of somatic panic disorder symptoms which originally were frequently attributed to somatic causes resulted in only a small increase of prevalence rate of PD. This is probably caused by the diagnostic definition of panic disorder. Although in the recoded situation many more people suffered from a panic attack (53 instead of 16), these panic attacks did not have the frequency (2 or more) and the consequences (constant worrying about a next panic attack or about the consequences of the panic attack; important behavioural changes due to the panic attacks) which are required for a psychiatric diagnosis of PD.

The findings of the present study are in line with the results reported in a community-based study (ECA-study) for the prevalence of late-life depression before and after recoding of symptoms originally attributed to somatic disorder (Heithoff, 1995). Heithoff observed only small differences in prevalence using the DIS as diagnostic instrument in which attribution is based on the respondents' self report.

There are some limitations of the present study, which must be mentioned. Firstly, the study population is a selective one. Serious cognitive impairment (MMSE <15), speech and language problems and extreme frailty were exclusion criteria. It is possible that problems with correct attribution of symptoms are even greater in these extremely frail patients. This could then cause larger differences in prevalence rates before and after recoding.

Secondly, the numbers of patients with MD, GAD and PD were small. Future studies in larger populations are needed to confirm the results of this study.

Conclusions

Even in a setting with frail elderly, such as a nursing home, misclassification of somatic symptoms of depression and anxiety has, at maximum, only a very modest effect on the prevalence of depressive and anxiety disorders.

Our findings therefore question the widely held belief that MD, GAD and PD are under diagnosed in elderly patients due to misclassification of somatic symptoms.

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Chapter 6

Pain among nursing home patients in the Netherlands: prevalence, course, clinical correlates, recognition and analgesic treatment. An observational cohort study.

* Submitted as: Smalbrugge M, Jongenelis K, Pot AM, Beekman ATF, Eefsting JA. Pain among nursing home patients in the Netherlands: prevalence, course, clinical correlates, recognition and analgesic treatment. An observational cohort study.

Abstract

BACKGROUND Pain is highly prevalent in nursing homes (NH) in several countries. Data about pain in Dutch NH's, where medical care is delivered by specifically trained NH-physicians, are not available.

OBJECTIVE to determine prevalence, course, correlates, recognition and treatment of pain among Dutch NH-patients and to make a comparison with international data.

METHODS The study population consisted of 350 elderly NH-patients from 14 Dutch NH's. Pain (pain-subscale Nottingham Health Profile) and clinical characteristics (gender, age, cognition, depression, anxiety, sleeping problems, morbidity and functional status) were measured at baseline and at six months.

Association of pain (baseline and six months) with clinical characteristics was assessed with chi-square and multiple logistic regression analyses.

RESULTS Pain-prevalence was 68.0% (34.3% some pain symptoms, 33.7% many pain symptoms). 80% of the patients with pain at baseline still experienced pain at six months. Pain at baseline was significantly associated with depression (OR: 2.28; 95% CI: 1.18-4.40) and anxiety (OR 2.28; 95% CI: 1.09-4.76). Pain at six months was associated with pain at baseline (OR 32.28; 95% CI: 7.27-143.59) and depression at baseline (OR: 2.47; 95% CI:1.06-5.73). Recognition of pain by NH-physicians varied (35% to 69.4%) depending on measurement instrument and number of pain symptoms. Analgesics were received by 64.5% (paracetamol, NSAIDs, opioids). Paracetamol and opioids frequently were prescribed below daily defined doses.

CONCLUSION Pain occurred frequently also among Dutch NH-patients and was associated with depression and anxiety. Recognition and treatment by NH-physicians proved sub-optimal. Future studies should focus on interventions to improve recognition and treatment of pain.

Background

One of the main goals of nursing home care is preservation of the best possible quality of life. A very important aspect of quality of life is being free of pain. Prompt recognition and adequate treatment is therefore requested when nursing home patients are suffering from pain. Previous studies in several countries showed that pain is a common problem in the long term care setting (Fox et al., 1999; Won et al., 1999; McClean and Higginbotham, 2002). Prevalence rates ranged from 27% to 83%, with the highest rates in studies that used patients self-report. One longitudinal study furthermore indicated that pain is chronic in many patients (Won et al., 2004). Factors found to be associated with pain included depression, anxiety, impaired sleep, comorbidity, reduced mobility and decreased involvement in recreational activities (Parmelee et al., 1991; Ferrell et al., 1990, Basler et al., 2003). Recognition of pain by nursing home staff is poor and frequently no treatment is given (McClean and Higginbotham, 2002).

For the Netherlands, in which nursing home physicians are employed by nursing homes for medical care and in which nursing home medicine is an independent medical specialism with its own specific training programme (Hoek et al., 2003; Ribbe, 1993), epidemiological data about pain in nursing homes are lacking until now. More knowledge about pain in Dutch nursing homes can contribute to a further improvement of the quality of medical care and the quality of life of its residents.

The aim of the present study was therefore (a) to determine prevalence, course, correlates, recognition and treatment of pain in Dutch nursing home patients and (b) to make a comparison with international data.

Methods

Study population

This study is based on data collected in the Amsterdam Groningen Elderly Depression (AGED) study (Jongenelis et al., 2004). Fourteen nursing homes in the North West of the Netherlands were selected to participate. Nursing homes for specific disease categories were excluded as were small nursing homes (<60 beds). No large reorganization or rebuilding activities were allowed because of possible influence on the mood of the respondents. To be eligible, subjects had to be aged 55 years and over, speakers of Dutch and able to communicate sufficiently,

without serious hearing problems or severe cognitive impairment (Mini-Mental State Examination ≥ 15) (Folstein et al., 1975).
Patients with at baseline an expected stay of less than 6 months were excluded. All eligible patients were informed verbally and in writing. Written informed consent was obtained from all respondents prior to inclusion. The study received approval from the Medical Ethics Committee of the VU University Medical Center.
Between November 1999 and May 2001, data were collected. All measurements were administered twice in a face to face interview: at baseline and six months later. Sampling procedures are described in detail elsewhere (Jongenelis et al., 2004).
From the source population (696 nursing home patients who met inclusion criteria) eventually an active sample of 350 patients remained who participated in the baseline data-collection. 58 patients (8.3%) died before the interview could be started and 46 patients (6.6%) could not be interviewed because they were suffering from acute illness, terminal illness or coma. 235 patients (33.8%) refused to participate in this study and 7 patients (1.0%) were not included for other reasons.
In the second wave at six months 229 (65.4% of the original 350) patients participated; 43 (12.3%) patients died; 16 (4.6%) patients had severe cognitive impairment; 9 (2.6%) patients were unable to communicate; 15 (4.3%) patients were hospitalised or moved; 35 (10%) patients refused and 3 (0.9%) patients were lost to follow-up for other reasons.

Measurement instruments

Measurement of pain

Perceived pain was measured with the pain subscale of the Dutch version of the Nottingham Health Profile, which measures pain by selfreport (Erdman et al., 1993). The pain subscale of the Nottingham Health Profile contains 8 items with a yes-no format and a score ranging from 0 to 8. Cronbach's alpha was 0.70 in the present study. The internal consistency of the reliability of the pain scale in previous studies (Erdman et al., 1993; Campen van and Kerkstra, 1998; Holtkamp, 2003) proved also to be satisfying (Cronbach's alpha:0.70-0.85) as was the test-retest reliability (Spearman's r: 0.84).
The items of the pain subscale concern pain intensity as well as situations in which pain occurs (i.e. 'suffering unbearable pain' or ' pain when walking'). Pain was therefore used in analyses as an ordinal variable and not as a continuous variable. Painstatus was scored as 0 = no symptoms of pain, as 1 = some pain symptoms (1-2) or as 2 = many pain symptoms (3-8), based on the distribution.
Recognition of pain was measured by asking the attending nursing home physician at baseline if the patient experienced pain in the past two weeks. Medical care in Dutch nursing homes is delivered on a daily basis by specially trained and registered nursing home physicians. Recognition was also measured by recording if patients were treated with analgesics. Analgesic drug use, including the prescribed daily dose/defined daily dose ratio (PDD/DDD-ratio), was assessed by chartreview and was classified according to the Anatomical Therapeutic Chemical (ATC) classification system (WHO, 1997). The PDD/DDD-ratio is used as an indication of the adequacy of

dosing. Three main groups of analgesics were distinguished: paracetamol, non-steroidal anti-inflammatory drugs (NSAIDS) and opioids.
Prescription of antidepressiva and of anxiolytica/hypnosedativa (mainly bezodiazepines) was also registrated.

Measurement of correlates

Demographic characteristics like age and gender were gathered by chart review. Cognitive functioning was assessed with the Mini-Mental State Examination (MMSE) (Folstein et al., 1975). Sum scores were dichotomized: a score between 15 and 23 referred to the presence of cognitive impairment. A cut-off score of 15 was chosen as exclusion criterion: required for a reliable use of the Geriatric Depression scale.
Depressive symptoms were measured with the Geriatric Depression Scale (Yesavage et al., 1983). A score of ≥11 was considered to be indicative for the presence of clinically relevant depressive symptoms.
Anxiety was measured with the Schedules for Clinical Assessment in Neuropsychiatry (WHO, 1999). Anxiety symptoms were defined as presence of phobic complaints or presence of feelings of anxiety or panic in the last four weeks.
Sleep was also measured with the SCAN. Presence of impaired sleep was defined as having troubles falling asleep or being awake in the night (both for at least one hour, three or more times a week, during at least one month) or waking up early (two hours earlier than normally, three or more times a week, during at least one month).
Information about the presence of physical illnesses was obtained from the attending physician using a questionnaire containing thirteen main groups of somatic diseases. The total number of physical illnesses was dichotomized on the median.
Data on functional limitations were supplied by care personnel involved in direct daily care, using the Groningen Activity Restriction Scale (GARS) (Kempen et al., 1993). Sum scores were dichotomized on the median.

Statistical analyses

Analysis of attrition was done by comparing baseline characteristics (chi-square analyses) of patients who could be interviewed at baseline and at six months with baseline characteristics of patients who could only be interviewed at baseline.
Prevalence of pain was calculated at baseline and at six months. The relations between pain at baseline and demographic and clinical characteristics were evaluated by calculating crude odds ratios (OR) and corresponding 95% confidence intervals (CI). As a next step multiple logistic regression was used to calculate adjusted odds ratios. Only variables with a statistically significant ($p<0.05$) crude odds ratio were entered in the multiple logistic regression model.
To identify baseline characteristics that were associated with presence of pain at six months the same analyses were done with pain at six months as dependent variable. Pain at baseline was entered in these analyses also as an independent variable.

For describing the course of pain three groups of patients were distinguished. A group with persistent pain (some or many pain symptoms at baseline and at six months), a group with intermittent pain (some or many pain symptoms at baseline or at six months) and a group without pain (no pain symptoms at baseline and at six months). To identify baseline characteristics associated with persistent pain and intermittent pain crude odds ratios were calculated and after that adjusted odds ratios using a multiple logistic regression model in which variables with a statistically significant crude odds ratio ($p<0.05$) were entered.
Prevalence of analgesic use and prescription of antidepressiva and of anxiolytica/hypnosedativa was calculated at baseline and at six months and differences in use in patients with and without symptoms of pain were assessed.

Table1. Demographic and clinical characteristics of a sample of nursing home patients in the Netherlands (n=350).

Characteristic		N	%
Age (mean 79.3; SD 8.3; range:55-99)	55-79	169	48.3
	80-99	181	51.7
Sex	male	109	31.1
	female	241	68.9
Length of stay	> 1 year	209	59.7
	≤ 1 year	141	40.3
Cognitive functioning (MMSE) (mean 22.0; SD 3.8; range 15-30)	15-23	221	63.1
	24-30	129	36.9
Depressive symptoms (GDS ≥ 11)	present	155	44.3
	not present	195	55.7
Anxiety symptoms (n=333)	present	99	29.7
	not present	234	70.3
Impaired sleep (n=326)	present	89	27.3
	not present	237	72.7
Number of physical illnesses (n=300) (mean 3.7; SD 1.6; range 1-9)	≤ 3	145	48.3
	> 3	155	51.7
Functional impairments (n=340)	severe	172	50.6
	moderate	168	49.4

Results

Sample and attrition

Demographic and clinical characteristics are shown in table 1. About two thirds of the sample were women, their mean age was 79.3 (SD 8.3) years. All patients had moderate to severe functional impairments.

Analysis of attrition showed no statistically significant differences in baseline characteristics between patients who participated in data-collection at baseline and at six months, and patients who only participated at baseline.

Prevalence, risk indicators and course

The prevalence of pain was 68.0% at baseline: 34.3% had some symptoms of pain (1-2) and 33.7% had many symptoms of pain (3-8). Constant pain was reported by 21.1%, 15.8% reported unbearable pain and 34.3% reported nightly pain. There were no statistically significant differences between prevalence of pain at baseline and prevalence of pain at six months.
Table 2 shows that presence of many symptoms of pain at baseline was statistically significant associated in multiple logistic regression analysis with presence of anxiety symptoms and depressive symptoms. This association was not found for presence of some pain symptoms.
Presence of many symptoms of pain at six months was in multiple logistic regression analysis statistically significant associated with presence of pain (OR 32.28; 95% CI 7.26-143.59) and depressive symptoms (OR 2.47; 95% CI 1.06-5.73) at baseline. Presence of some symptoms of pain at six months was only statistically significant associated with presence of pain at baseline (OR 3.32; 95% CI 1.69-6.54).
Data about the course of pain were available for 216 patients: 121 had persistent pain, 56 intermittent pain, 39 no pain. Nearly 80% (121/153) of the patients with pain at baseline still reported pain after six months. Intermittent pain showed no statistically significant association with baseline characteristics. For persistent pain were statistically significant crude odds ratios observed for presence of anxiety symptoms (OR 3.13; 95% CI 1.21-8.08) and of depressive symptoms OR 2.85; 95% CI 1.28-6.36), but adjusted odds ratios only showed a trend for statistically significant association (anxiety symptoms: OR 2.32; 95% CI 0.85-6.33; p=0.099; depressive symptoms: OR 2.21; 95% CI 0.94-5.18; p=0.069).

Recognition and treatment

Presence of some symptoms of pain was recognized in 35% and presence of many symptoms of pain was recognized in 40% of the patients, when measured by interviewing the attending physician.
Pain-recognition was also measured by assessing prescription of analgesics (see table 3). Pain was then recognized in 59.6% of the patients with some symptoms of pain and in 69.4% of the patients with many symptoms of pain.

Table 2. Clinical characteristics associated with presence of pain at baseline in a sample (n=350)[a] of Dutch nursing home patients.

Characteristic	Some pain symptoms n=117		Many pain symptoms n=115	
	Crude OR (95% CI)[b]	*Adjusted OR* (95% CI)[c]	*Crude OR* (95% CI)[b]	*Adjusted OR* (95% CI)[c]
Age (≥ 80 / < 80)	0.65 (0.38-1.10)		0.83 (0.49-1.40)	
Sexe (female/male)	1.31 (0.75-2.29)		1.17 (0.67-2.05)	
mmse-score (> 23 / ≤ 23)	1.30 (0.76-2.23)		1.12 (0.65-1.93)	
Depressive symptoms (yes/no)	1.72 (0.99-2.98)		**2.99 (1.73-5.19)[d]**	**2.28 (1.18-4.40)**
Anxiety symptoms (yes/no)	1.68 (0.88-3.21)		**3.52 (1.90-6.54)**	**2.28 (1.09-4.76)**
Sleeping problems (yes/no)	1.62 (0.84-3.12)		**2.55 (1.36-4.77)**	2.02 (0.99-4.13)
Number of physical illnesses (> 3 / ≤ 3)	1.07 (0.61-1.87)		**1.81 (1.03-3.18)**	1.83 (0.99-3.39)
Functional impairments (large/moderate)	0.95 (0.56-1.61)		1.26 (0.74-2.13)	

a Complete data of all variables were available for 293 patients

b Crude odds ratio (OR) and 95% confidence intervals (95% CI). Controlgroup (n=109) : patients without pain.

c Adjusted odds ratio derived from a multiple logistic regression model. As independent variables were entered variables with a statistically significant crude OR. Controlgroup (n=109): patients without pain.

d Statistically significant OR (p<0.05) in bold characters.

Table 3. Pain and presciption of analgesics, antidepressiva and anxiolytica/hypnosedativa at baseline in a sample (n=350)[a] of Dutch nursing home patients.

	No pain n=93	Some pain symptoms n=99	Many pain symptoms n=98
Analgesic monotherapy	25 (26.9%)	38 (38.4%)	48 (49.0%)
Paracetamol	14 (15.1%)	22 (22.2%)	22 (22.4%)
NSAIDs	7 (7.5%)	14 (14.1%)	17 (17.3%)
Opioids	4 (4.3%)	2 (2.0%)	8 (8.2%)
Other analgesics	-	-	1 (1.0%)
Analgesic combination therapy	-	9 (9.1%)	13 (13.3%)
Paracetamol and NSAIDs	-	4 (4.0%)	5 (5.1%)
Paracetamol and opioids	-	5 (5.1%)	5 (5.1%)
Paracetamol, NSAIDs and opioids	-	-	2 (2.0%)
Opioids and opioids	-	-	1 (1.0%)
Analgesic prn[b]	6 (6.5%)	12 (12.1%)	7 (7.1%)
No analgesic	62 (66.7%)	40 (40.4%)	30 (30.6%)
Antidepressiva	20 (21.5%)	31 (31.3%)	25 (25.5%)
Anxiolytica/hypnosedativa	34 (36.6%)	53 (53.5%)	50 (51.0%)

a Complete pain data and prescription data at baseline were available of 290 patients.

b Prescription as needed: did not occur with standard prescription of analgesics in this sample.

Table 3 shows that treatment with analgesics occurred frequently in the present population: 54.5% (158/290) had analgesics prescribed at baseline, prescription as needed included (8.6%). Analgesic prescription rate was the highest among patients who reported pain (64.5%, pnr included). Paracetamol was the most frequently prescribed analgesic, followed by NSAIDs and opioids.

The observed differences in analgesic therapy (monotherapy, combination therapy, prescription as needed, no therapy) between patients with and without pain (some or many symptoms) were statistically significant (Pearson chi-square 34.26; df 6; p<0.0001). Further analyses showed no significant difference in analgesic therapy between patients with some symptoms and many symptoms of pain (Pearson chi-square 4.63; df 3; p=0.20).

The majority of analgesic users at baseline still reported pain. Only 31 (19.6%) of them were free of pain, 59 (37.3%) still experienced some symptoms of pain and 68 (43.0%) still experienced many symptoms of pain.

Data of analgesic use at six months depicted similar results (data not shown).

Considering the adequacy of dosing, opioid-presciptions had in 12.5% a PDD/DDD-ratio of 1 and in 69.2% a PDD/DDD-ratio lower than 2/3. Paracetamol prescriptions showed in 15.5% a PDD/DDD ratio of 1 and in 30.8% a PDD/DDD-ratio lower than 2/3. NSAIDs were prescribed in 84.0% with a PDD/DDD-ratio of ≥ 1 and in 16.0% with a PDD/DDD-ratio below 1.
Combinations of analgesics were prescribed to 9.1-13.3% of the patients with pain at baseline.
There was no significant difference in antidepressiva prescription (Pearson chi-square 2.42; df 2; p=0.30) between patients with pain (some or many symptoms) and without pain, but patients with pain (some or many symptoms) used significantly more frequently anxiolytica/hypnosedativa than patients without pain (Pearson chi-square 6.39; df 2; p=0.04). Further analyses showed no significant difference in prescription of anxiolytica/hypnosedativa between patients with some and with many pain symptoms (Pearson chi-square 0.13; df 1; p=0.72).

Discussion

Prevalence, risk indicators, course

The prevalence of self-reported pain was high in this population of nursing home patients: 34.3% of the patients reported some symptoms of pain and an additional 33.7% many symptoms of pain at baseline. Only 32.0% was free of pain. This was in line with previous studies which used self-reported pain as method of pain measurement (Parmelee et al., 1991; Roy and Thomas, 1986; Parmelee et al., 1993; Sengstaken and King, 1993; Ferrell et al., 1995). Pain further appeared to be persistent: nearly 80% of the patients with pain at baseline still reported pain after six months. It is therefore not surprising that pain at baseline was the best predictor of pain six months later.
Important associated characteristics with more serious self-reported pain (presence of many symptoms of pain) at baseline were presence of depressive symptoms and anxiety symptoms. More serious self-reported pain at six months was associated with pain at baseline and also with presence of depressive symptoms.
The observed association with depressive symptoms and anxiety symptoms was also found in previous investigations (Parmelee et al., 1991). In a longitudinal study the association between pain and depressive symptoms was found to be intimate and reciprocal (Geerlings et al., 2002). As a consequence, when assessing and treating pain, attention should also be paid to diagnosing and treating depressive and anxiety symptoms.
Contrary to previous studies, no association of self-reported pain with cognitive functioning was observed (Parmelee et al., 1993; Scherder et al., 2001). This could be caused by the fact that in the present study only patients with a MMSE-score ≥15 were included, which implies that more severely demented patients were excluded.

Recognition and treatment

Recognition of pain measured by interview and recognition of pain measured by prescription of analgesics resulted in different recognition rates: 35-40% vs. 59.6-69.4%, presumably because

they reflect two ways of defining pain recognition. Analgesics prescription as measurement for pain recognition indicates that at some moment (before or after admission to the nursing home) a physician diagnosed pain and prescribed an analgesic.
A positive interview-answer as measurement for pain recognition indicates that the physician recognized that the patient experienced pain at the time of the interview.
Both methods of measuring pain recognition made clear that presence of pain in many patients remained undetected. Previous studies showed similar results, not only for recognition of pain by physicians but also for recognition by nursing staff (Cowan et al., 2003).
False attitudes about pain and age among elderly patients and their caregivers and non-communication about pain between patients and caregivers were held responsible for this underdetection (Cowan et al., 2003).
Treatment with analgesics occurred frequently in the present population: 54.5%. Analgesic prescription rate was the highest among patients who reported pain (64.5%, pnr included). Paracetamol was used the most frequently, followed by NSAIDs and opioids. In spite of use of analgesics many patients still reported pain. Underdosing of analgesics and a restrained prescription of combinations of analgesics and of opioids could be potential causes.
Underdosing, for which a PDD/DDD-ratio below 1 is indicative, was indeed observed, especially for opioids (PDD/DDD-ratio < 2/3: 69.2%) and to a lesser extent also for paracetamol (PDD/DDD-ratio < 2/3: 30.8%). PDD/DDD-ratio for NSAIDs on the other hand was relatively high (84% PDD/DDD-ratio ≥1) in view of the risk of renal failure and hypertension for older patients (Solomon and Gurwitz, 1997). A similar pattern of underdosing was found in a pharmaco-epidemiological study in six nursing homes Dijk van et al., 2000).
Combinations of analgesics were prescribed to about 10% of the patients with pain at baseline. Given the fact that these patients still had pain, one would expect a higher rate of combinations of analgesics.
Opioids were prescribed to 11.7% of the patients with pain at baseline and about half of the opioid-prescriptions were given as monotherapy. This seems not in line with pain-guidelines which advise opioids to be added to NSAIDs and paracetamol as a next step in analgesic treatment (American Geriatrics Society, 1998).
The high prevalence of pain in the present study and the observations made about recognition and treatment of pain suggest that in nursing homes in the Netherlands, pain-management is suboptimal just as was found in studies among nursing home populations in other countries, despite the deliverance of medical care by specifically trained nursing home physicians.
Assessment of pain by a standardized instrument at regular times, which is uncommon in the Netherlands (use of screening instruments like the Resident Assessment Instrument (Morris et al., 1995) is not mandatory) and interdisciplinary discussion of the assessment results by nursing staff and attending physician, may help to improve pain-management in nursing home patients (Weiner, 2004). The interdisciplinary discussion also offers a good opportunity for better implementation of recently published pain-guidelines (American Geriatrics Society, 2002).
Future studies should investigate if a standardized pain assessment and an interdisciplinary discussion of the assessment have a positive effect on pain among nursing home patients.

Limitations

The present study has some limitations, which warrant comment. Firstly, the study population is a selective one. Serious cognitive impairment (MMSE <15), speech and language problems, severe physical illness and expected discharge within six months were important exclusion criteria.

Secondly, attrition was considerable as could be expected among the frail population of elderly patients residing in nursing homes. Nevertheless, analysis of attrition showed no differences in distribution of baseline-characteristics between patients who remained in the study and patients who dropped out.

Thirdly, pain was measured with the NHP-pain subscale which contains items concerning different aspects of pain (pain-intensity as well as items concerning situations in which pain is present). Based on the number of NHP-pain symptoms an ordinal variable was constructed in order to create a pain variable representing increasing pain severity. Assumed was that not only pain intensity, but also the number of situations in which pain is present, indicate the presence of more serious pain.

Conclusion

Pain is a common and usually persistent problem among nursing home patients.

Important associations are observed with depressive and anxiety symptoms.

Recognition by nursing home physicians in the Netherlands is comparable to recognition in other countries and open for improvement.

Despite a high prescription rate of analgesics, many patients still report pain. This may be caused by underdosing and restrained use of analgesic combination therapy.

To warrant optimal quality of life of nursing home patients improvement of pain recognition and treatment is needed. Introduction of standardized pain assessments at regular times, treatment according to pain guidelines and interdisciplinary discussion of the assessment results and treatment effects, may help to establish this.

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Chapter 7

The impact of depression and anxiety on well being, disability and use of health care services in nursing home patients

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Abstract

OBJECTIVES To determine the impact of depression and anxiety on well being, disability and use of health care services among nursing patients

METHODS The study population consisted of 350 elderly nursing home patients from 14 nursing homes in the Netherlands. Well being, disability, use of health care services (i.e. assistance in ADL, paramedical care, number of medications) and depression and anxiety and other relevant characteristics (gender, age, education, marital status, urbanization, cognition, morbidity, social support) were measured cross-sectionally. Associations of well being, disability and use of health care services with independent baseline characteristics were assessed with bivariate and with multivariate analyses.

RESULTS Presence of depression and/or anxiety was associated with significantly less well being, but not with more disability. Presence of depression and /or anxiety was also significantly associated with four of the seven indicators of health care service use measured in this study: less assistance in ADL, more consultation of medical specialists, a higher mean number of medications and more use of antidepressants.

CONCLUSIONS Presence of depression and/or anxiety has a statistically and clinically significant negative impact on well being, but not on disability. Future studies should focus on interventions for improving the detection, diagnosis and treatment of depression and/or anxiety in the nursing home.

Introduction

Depression and anxiety are common psychiatric disorders among nursing home patients. A recent review, that included 36 studies from various countries, reported a prevalence rate of major depression ranging from 6% to 26%, a prevalence rate of minor depression ranging from 11% to 50% and a prevalence rate of depressive symptoms (GDS>10) ranging from 36% to 49% (Jongenelis et al., 2003). For anxiety disorders (DSM-IV and subthreshold anxiety disorders) prevalence rates ranged from 9.9% to 13.2% (Smalbrugge et al., 2005b; Parmelee et al., 1993).

It is well known that both depression and anxiety have negative consequences for well being, functioning and use of health care services of elderly living in the community (Beekman et al., 1997; Beekman et al., 2002; Beurs de et al., 1999; Lenze et al., 2001). In addition, depression is associated with excess mortality, both in community-dwelling elderly and in elderly nursing home patients (Cuijpers and Smit, 2002; Geerlings et al., 2002; Rovner et al., 1991).

Reliable information about the impact of depression and anxiety on well being, disability and use of health care services among nursing home patients, which is expected to be considerable, is still lacking. An adequate estimation of this impact however is important. It may convince nursing home staff-members and policymakers of the importance of diagnosis and treatment of these disorders and urge them to develop and implement strategies to enhance their detection and treatment rate, which have been shown to be poor (Falck et al., 1999; Teresi et al., 2001).

The aim of the present study was to investigate the consequences of depression and anxiety for well being, disability and use of health care services among nursing patients.

Methods

Study population

This study is based on data collected in the Amsterdam Groningen Elderly Depression (AGED) study (Jongenelis et al., 2004). Fourteen nursing homes in the North West of the Netherlands were selected to participate. Nursing homes for specific disease categories were excluded, as were small nursing homes (<60 beds). No large reorganization or rebuilding activities were allowed because of possible influence on the mood of the respondents. To be eligible, subjects

had to be aged 55 years and over, speakers of Dutch and able to communicate sufficiently, without serious hearing problems or severe cognitive impairment (Mini-Mental State Examination ≥ 15) (Folstein et al., 1975). All eligible patients were informed verbally and in writing. Informed consent was obtained from all respondents prior to inclusion. The Medical Ethical Committee of the VU Medical Center approved the study. Between November 1999 and May 2001, data were collected. All measurements were administrated in a face-to-face interview, lasting between one and three hours, spread over one to three interview sessions.
From the source population (696 nursing home patients who met inclusion criteria) eventually an active sample of 350 patients remained who participated in the baseline data-collection. 58 patients (8.3%) died before the interview could be started and 46 patients (6.6%) could not be interviewed because they were mentally or physically too ill to be interviewed. 235 patients (33.8%) refused to participate in the study and 7 patients (1.0%) were not included for other reasons.
Complete interview data were available of 333 patients of the remaining 350 patients: 47.8% of the source population.

Measurement instruments

Well being was measured using the Philadelphia Geriatric Centre Morale Scale (PGCMS) (17 items concerning perceived psychosocial well being). The scale was developed for institutionalized elderly patients (Lawton, 1972; Morris and Sherwood, 1975; Lawton, 1975). In the development sample of the Dutch version of the PGCMS Cronbach's alpha was 0.73 (Campen van and Kerkstra, 1998). In two other samples of Dutch nursing home residents Cronbach's alpha was 0.79 (Holtkamp et al., 2000) and 0.72 (Gerritsen, 2004). Cronbach's alpha was 0.84 in the current sample. *Disability* was measured using the subscale somatic autonomy (17 items concerning perceived physical functioning) of the Dutch version of the Sickness Impact Profile (SIP) (Bruin de, 1996). The SIP was developed for patients with chronic diseases and is also used in nursing home populations (Rothman et al., 1989; Gerety et al, 1994; Mulrow et al., 1994). Cronbach's alpha of the Dutch version of the subscale somatic autonomy was 0.85 (Campen van and Kerkstra, 1998). In another sample of nursing home patients Cronbach's alpha of this subscale was 0.78 (Holtkamp et al., 2000). Cronbach's alpha was 0.82 in the present sample. Both scales (PGCMS and somatic autonomy subscale of the SIP) were administered in a face-to-face interview by trained health care workers and an answer on each of the items was scored on a two-point scale (yes/no). A score (range 0-17) for each of the scales was calculated by adding the scores of the items. Lower PGCMS-scores indicate less well being, while lower SIP-scores indicate more disability.
Indicators for *use of health care services* were use of assistance in Activities of Daily Living (ADL), use of paramedical care (physiotherapy, occupational therapy, logopedic therapy), use of psychosocial care (psychologist, psychomotor therapy, pastor), use of medication (total number, use of antidepressants and use of anxiolytica or hypnotica) and current consultation or treatment by a medical specialist.

Use of health care services, except medication use and use of assistance in ADL, was measured by a self constructed questionnaire (yes/no questions) that was filled in by two nursing staff members directly involved in the care of the patient. Medication use was assessed by chart review. Use of assistance in ADL was measured with a 10-item questionnaire based on the Groningen Activity Restriction Scale that was also filled in by two nursing staff members directly involved in the care of the patient (Kempen et al., 1993). Scores range between 0 (no need of assistance in ADL) and 10 (maximum need of assistance in ADL).
Depression and anxiety were measured with the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) (World Health Organization, 1999). The SCAN is a semi-structured diagnostic interview that generates diagnoses of depressive disorders and anxiety disorders according to the DSM-IV criteria (American Psychiatric Association, 1994). Symptoms that could be attributed to somatic disorders or use of medication could not contribute to the diagnosis of depression or anxiety although the effect of attribution on the prevalence of depression and anxiety proved to be small: less than 10 percent (Smalbrugge et al., 2005a).
Major depression and *anxiety disorders* were diagnosed using DSM-IV criteria (American Psychiatric Association, 1994). For *minor depression* DSM-IV research criteria were used. *Sub threshold anxiety disorders* were defined, based on criteria (see table 1) developed by Angst et al. (1997) and Heun et al. (2000).
Demographic characteristics including age, gender, having a partner, education and urbanization were gathered using a standard questionnaire. Education was dichotomized in 6 years or more versus less than 6 years of education. Urbanization was dichotomized in very dense (2500 addresses per square kilometer) versus medium dense urbanization (1000-2500 per square kilometer). There were no low urbanization areas.
Information about the presence of *physical illnesses* was obtained from the attending physician using a questionnaire containing thirteen main groups of diseases.
Cognitive functioning was assessed with the Mini-Mental State Examination (MMSE) (Folstein et al., 1975).
Perceived social support was assessed with the Social Support List-Interaction version 12-I (SSL12-I), developed and validated in the Netherlands, consisting of 12 items meant for use in the elderly (Eijk van et al., 1994).

Data analyses

Indicators of well being, disability and use of health care services were the dependent (outcome) variables. Since data were gathered from respondents in 14 various nursing homes, observations within the homes might be dependent (clustering). Therefore multilevel regression analyses were used for assessing associations of depression and/or anxiety and other independent variables with indicators of well being, disability and use of health care services in order to correct for clustering. Before the multilevel regression analyses colinearity among the independent variables was examined (all correlation coefficients were below 0.4).

Model assumptions of the multilevel regression analyses were tested with normal probability plots. The multilevel analyses have been carried out in MLwiN (Rasbash and Woodhouse, 1995).
The independent variable presence of depression and/or anxiety was used as a dichotomous variable (present/not present) in these multilevel regression analyses.
When significant associations of the dichotomous variable depression and/or anxiety with the outcome variables existed, the next step was to analyze (using ANOVA and chi-square analyses) how these associations were for presence of depression and/or anxiety used as a categorical variable with four categories:

1) Comorbid anxiety and depression (cad; n=17): patients with co-occurrent major or minor depression and DSM (or subthreshold) anxiety disorder.
2) pure depression (pd; n=57): patients with major or minor depression without DSM (or subthreshold) anxiety disorder.
3) pure anxiety (pa; n=16): patients with DSM (or subthreshold) anxiety disorder without major or minor depression.
4) patients without depression and/or anxiety (n=243).

Table 1. Criteria for subthreshold anxiety disorders based on criteria developed by Angst et al. (1997) and Heun et al (2000).

Disorder	Criteria
Subthreshold panic disorder	A subthreshold panic attack (a panic attack with one or more physical symptoms) during the last four weeks
Subthreshold agoraphobia	Unreasonable fear in places or situations from which it is difficult to leave during the last four weeks and at least some avoidance or symptoms of anxiety
Subthreshold specific phobia	Persistent fear of circumscribed stimulus during the last four weeks and at least some avoidance or consequences
Subthreshold social phobia	Persistent fear of situations in which a person is exposed to social interactions during the last four weeks and at least some avoidance or consequences
Subthreshold generalized anxiety disorder	Unrealistic anxiety or worry about two or more life-situations during the last four week and at least one physical or vegetative symptom

Results

Sample characteristics

Demographic and clinical characteristics are shown in table 2. About two thirds of the sample was female. Their mean age was 79.3 (SD 8.3) years. The age and gender distribution of the study population was compared with national data of nursing home patients of somatic wards

(Prismant, 2001). There was no significant difference in gender, but men were older in the study population (77.1 vs. 73.1 year; p<0.001).

Depression (minor or major) was prevalent in 22.2% and (subthreshold) anxiety disorders in 9.9% as reported earlier (Jongenelis et al., 2004; Smalbrugge et al.,2005b). The majority of the participants had cognitive impairments: 206 (61.9%) had a MMSE-score below 24.
The mean score of the subscale somatic autonomy of the SIP was low (6.8), which reflects the high disability rate of the study population. Use of paramedical care was very common (79.6%), while the mean number of medications used was 6.5.

Depression and anxiety: impact on well being and disability

Anxiety and/or depression were significantly associated with less well being, but not with disability (table 3). The decrease in well being score associated with depression and/or anxiety was more than 25% (4.7/17). Well being was further significantly and positively associated with perceived social support. Having a partner and living in a less densely urbanized area were significantly associated with more disability (lower SIP-score).
With analysis of variance (ANOVA) differences in well being were further analyzed using presence of depression and/or anxiety as a categorical variable with four categories. Well being was significantly different between patients with CAD, PD, PA and patients without anxiety and depression. Post hoc analyses, using Bonferroni correction, showed that patients with CAD experienced significantly less well being than patients with PA (p<0.001) or patients without depression and/or anxiety (p=0.001). The same observation was made for patients with PD (vs. PA: p=0.002; vs. no depression and/or anxiety: p<0.001).

Depression and anxiety: consequences for use of health care services

Anxiety and/or depression (used as dichotomous variable) were significantly associated with four of the seven indicators of use of health care services (table 4). Presence of anxiety and/or depression was associated with less received assistance in activities of daily life and with a higher consumption of medical specialist consultation and medication, and with more use of antidepressants. As expected, consultation of medical specialist and the number of medications used were also significantly associated with the number of physical illnesses. Use of anxiolytica/hypnosedativa was not significantly associated with depression and/or anxiety, but was only associated with demographic variables (female gender and not having a partner).

Table 2. Demographic and clinical characteristics in a sample of nursing home patients in the Netherlands (N=350).

Independent variables		N	%
Age	mean 79.3 (sd 8.3; range 55-99)		
Gender	female	241	68.9
	Male	109	31.1
Having a partner	no	247	70.6
	yes	103	29.4
Urbanization area nursing home	medium densely urbanized	258	73.7
	very densely urbanized	92	26.3
Years of education	≤ 6 years	146	42.0
	> 6 years	202	58.0
Number of physical illnesses	mean 3.7 (sd 1.6; range 1-9)		
Depression	none	259	77.8
	minor depression	47	14.1
	major depression (DSM-IV)	27	8.1
Anxiety	none	300	90.1
	subthreshold anxiety disorder	14	4.2
	anxiety disorder (DSM-IV)	19	5.7
MMSE	mean 22.0 (sd 3.8; range 15-30)		
Perceived social support	mean 25.6 (sd 6.2; range 12-47)		

Dependent variables		N	%
Well being (PGCMS-score)	mean 10.1 (sd 4.3; range 0-17)		
Disability (SIP-score)	mean 6.8 (sd 3.7; range 0-17)		
Assistance in Activities of Daily Life	mean 5.5 (sd 2.6; range 0-10)		
Paramedical care	yes	219	79.6
	no	56	20.4
Psychosocial care	yes	55	20.0
	no	220	80.0
Medical specialist consultation	yes	79	29.0
	no	193	71.0
Number of medications	mean 6.5 (sd 3.1; range 0-18)		
Antidepressants	yes	75	26.2
	no	211	73.8
Anxiolytica, hypnosedativa	yes	135	47.2
	no	151	52.8

Notes: DSM-IV: Diagnostic and Statistical Manual of Mental Disorders, 4th edition; MMSE: Mini-Mental State Examination; PGCMS: Philadelphia Geriatric Centre Morale Scale; sd: standard deviation; SIP: Sickness Impact Profile.

Table 3. Effect of independent variables on well being and disability in multilevel regression analyses.

	Well being* B (CI)	Disability B (CI)
Constant	6.29	3.76
Female gender		
Age		
No partner		1.54 (0.50 – 2.59)
Medium densely urbanization		-1.37 (-0.11 – -2.63)
> 6 years education		
Anxiety and/or depression	-4.70 (-3.73 – -5.67)	
MMSE		
Number of physical illnesses		
Perceived social support	0.10 (0.02 – 0.17)	

Notes: B: regression coefficient; CI: 95%-Confidence Interval; MMSE: Mini-Mental State Examination; p: probability. * Only statistically significant relationships are shown.

Subsequent analyses, using ANOVA and chi-square analyses with post hoc analyses (Bonferroni and pair-wise comparisons), with presence of depression and/or anxiety as categorical variable (4 categories) showed that use of antidepressants was significantly higher in patients with CAD compared to patients with PD (p=0.026), PA (p=0.031) and normal controls (p=0.001). Also was shown that medical specialist consultation was significantly more likely in patients with PA compared to patients without anxiety and depression (p=0.025).

Discussion

Our aim was to investigate the impact of depression and anxiety on well being, disability and use of health care services among nursing home patients.

In line with previous population based studies we observed a significant association of depression and/or anxiety with well being (Beekman et al., 1997; Beekman et al., 2002; Beurs de et al., 1999). Controlling for competing reasons for impaired well being, depression and/or anxiety was associated with more than 25% decrease in well being score, indicating that in nursing home patients these disorders have considerable impact on well being. Comparison of well being scores of patients with CAD, PD and PA, showed that especially CAD and PD resulted in poor

Table 4. Effect of independent variables on indicators of use of health care services in multilevel regression analyses.

	*indicators of use of health care services**						
	Assistance in adl B (CI)	**Paramedical care B (CI)**	**Psychosocial care B (CI)**	**Medical specialist consultation B (CI)**	**Number of medications B (CI)**	**Antidepressants B (CI)**	**Anxiolytica, hypnosedativa B (CI)**
Constant	9.82	2.14	2.74	-2.26	2.43	2.54	-0.16
Female gender							0.71 (0.10 – 1.32)
Age			-0.07 (-0.02 – -0.12)				
No partner	-0.96 (-0.13 – -1.78)						-0.72 (-0.07 – -1.37)
Medium densely urbanization							
> 6 years education							
Anxiety and/or depression	-0.80 (-0.02 – -1.58)			0.79 (0.15 – 1.45)	0.96 (0.21 – 1.70)	0.74 (0.12 – 1.35)	
MMSE	-0.16 (-0.06 – -0.25)						
Number of physical illnesses				0.25 (0.06 – 0.44)	0.59 (0.38 – 0.81)		
Perceived social support		0.07 (0.00 – 0.13)			0.12 (0.06 – 0.17)		

Notes: B: regression coefficient; CI: 95%-Confidence Interval; MMSE: Mini-Mental State Examination; p: probability. * Only statistically significant relationships are shown.

well being. Timely recognition and adequate treatment of depression and anxiety may improve the well being of these patients.

A significant association of depression and/or anxiety with disability was not observed, contrary to findings in population based studies, in which both depression and anxiety disorders were significantly associated with disability (Beekman et al., 1997; Beekman et al., 2002; Beurs de et al., 1999). This is probably due to the fact that disability is a very important reason for nursing home admission. The low average score (6.8) on the SIP-scale bears testimony to this. Restriction of range in the disability measure has probably caused a lack of association with depression and anxiety.

The observed association of disability with having a partner and with living in a less densely urbanized area may have sociological reasons. Probably people are longer cared for at home when having a partner and when living in less urbanized areas, resulting in higher levels of disability at nursing home admission.

With regard to the use of health care services depression and/or anxiety was significantly associated with four of the seven indicators of use of health care services. For three indicators an increased use was observed (current medical specialist consultation or treatment, number of medications, use of antidepressants) and in one a decreased use was observed (assistance in ADL). Medical specialist consultation or treatment and number of medication were also, as might be expected, significantly associated with the number of physical illnesses.

Contrary to observations among elderly in the community we did not find an association of depression and/or anxiety with use of anxiolytica/hypnosedativa (Beekman et al., 1997; Beurs de et al., 1999). This may be explained by the fact that sleeping problems, frequently present,

are responsible for most of the anxiolytica/hypnosedativa use in nursing home patients and not presence of depression and/or anxiety (Svarstad and Mount, 2002).

Strenght and limitations

To our knowledge the present study is the first that investigates the impact of depression and anxiety on well being, disability and use of health care services among nursing home patients. Use of multilevel analyses enabled controlling for the effect of clustering on the observed associations between independent and dependent variables.

There are some limitations of the present study, which also must be mentioned.

Firstly, the study population is a selective one. Serious cognitive impairment (MMSE <15), speech and language problems and severe physical illness were exclusion criteria. Refusal to participate occurred also frequently. This limits generalizing of the results to all nursing home patients. Secondly, the study had a cross-sectional design, which limits conclusions about causal relationships between variables. And finally, in the multilevel regression analyses we used a dichotomized variable 'presence of depression and/or anxiety'. In 82.2% of these patients depression was present. The associations of outcome variables with 'presence of depression and/or anxiety' observed in these analyses are probably mainly caused by presence of depression. The results of the ANOVA for the subgroups CAD, PD, PA and normal controls, support this. Patients with CAD and PD have significantly less well being in these analyses than PA and normal controls.

Conclusions

Depression and/or anxiety were associated with a significant and clinically relevant decrease of well being. Improved detection and more adequate treatment of depression and anxiety, which currently are clearly sub optimal (Falck et al., 1999; Teresi et al., 2001; Alexopoulos et al., 2002), may help to achieve more well being for this frail population of elderly. Ischer et al. (2002) found that pharmacological treatment combined with stimulation and support of patients to participate in recreational activities was successful in this setting. Additional studies directed at development and implementation of combined strategies to improve detection and treatment of depression and anxiety are needed to confirm their results.

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Chapter 8

Incidence and outcome of depressive symptoms in nursing home patients in the Netherlands

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Abstract

OBJECTIVES To assess incidence and outcome of depressive symptoms among nursing home (NH) patients and to identify clinical characteristics predicting onset and persistence of depressive symptoms.

METHODS Depressive symptoms (GDS>10) and relevant correlates were assessed at baseline and at follow-up (6 months) in 350 NH-patients of 14 Dutch NH's with the Geriatric Depression Scale (GDS). Predictors of onset and persistence were studied using chi-square statistics and multiple logistic regression analyses.

RESULTS The prevalence of depressive symptoms decreased from 41.3% to 28.9% during six months follow-up. The onset of depressive symptoms in those without depressive symptoms at baseline was 4.7%, while the rate of persistence was 63.3%. Persistence of depressive symptoms was more frequent in patients with higher GDS-scores (18-30) at baseline. No baseline characteristics were associated with onset of depressive symptoms. Persistence of depressive symptoms was only associated with more years of education.

CONCLUSIONS Pre-admission factors and transition may largely be responsible for depressive symptoms among nursing home patients. The observed substantial decrease in prevalence of depressive symptoms over six months, is largely due to remission of depressive symptoms present at baseline. Adaptation of nursing home patients to pre-admission factors, facilitated by the nursing home environment, may explain this observed decrease of depressive symptoms.

Future studies should evaluate interventions targeted at patients with higher GDS-scores (18-30).

Introduction

Depression is a common psychiatric disorder in older adults and is associated with increased mortality and disability and less well being (Rovner et al., 1991; Wells et al., 1989; Beekman et al., 1997; Beekman et al., 2002). In nursing home populations prevalence rates have been found ranging from 6% to 26% for major depression, from 11% to 50% for minor depression and from 30% to 48% for depressive symptoms (Jongenelis et al., 2003).

Longitudinal studies of depression in nursing home patients are scarce, therefore little is known about the incidence and course of depressive symptoms among nursing home patients. Published studies mostly include residents from just one nursing home (Katz et al., 1989; Foster et al., 1991; Parmelee et al., 1992; Rozzini et al., 1996). Reported incidence rates (11.9% to 19%) and especially reported remission-rates (12-44%) of depressive symptoms vary considerably. Two studies suggested an association of chronicity and incidence of depressive symptoms with disability and physical health (Parmelee et al., 1992; Rozzini et al., 1996).

The aim of the present study was (a) to investigate the six month course of depressive symptoms and (b) to identify factors predicting the onset and persistence of depressive symptoms among nursing home patients.

Methods

Study sample

This study is based on data collected in the Amsterdam Groningen Elderly Depression (AGED) study (Jongenelis et al., 2004). Fourteen nursing homes in the North West of the Netherlands were selected to participate. Nursing homes for specific disease categories were excluded as were small nursing homes (<60 beds). No large reorganization or rebuilding activities were allowed because of possible influence on the mood of the respondents. To be eligible, subjects had to be aged 55 years and over, speakers of Dutch and able to communicate sufficiently, without serious hearing problems or severe cognitive impairment (Mini-Mental State Examination $\geq$ 15) (Folstein et al., 1975). All eligible patients were informed verbally and in writing. Written informed consent was obtained from all respondents prior to inclusion. The study received approval of the Medical Ethical Committee of the VU University Medical Center.

Between November 1999 and May 2001, data were collected. All measurements were administrated in a face-to-face interview, lasting between one and three hours, spread over one to three interview sessions.

From the source population (696 nursing home patients who met inclusion criteria) eventually an active sample of 350 patients remained who participated in the baseline data-collection. 58 patients (8.3%) died before the interview could be started and 46 patients (6.6%) could not be interviewed because they were mentally or physically too ill to be interviewed. 235 patients (33.8%) refused to participate in his study and 7 patients (1.0%) were not included for other reasons.

From the source population 218 patients (study-sample) participated in the follow-up at 6 months. Reasons for attrition after baseline (n=132) were death (n=45), refusal (n=37), MMSE<15 (n=16), moved (n=14), mentally or physically too ill to be interviewed (n=10), incomplete interview (n=4), unknown (n=4), severe aphasia (n=1) and severe hearing impairment (n=1).

Measurement instruments

Depressive symptoms

Depressive symptoms were measured using the Geriatric Depression Scale (GDS) (Yesavage et al., 1983). The GDS is a 30-item questionnaire, specifically developed for the elderly. The instrument has been found to be reliable and valid in multiple settings and has also been recommended for use in the nursing home population (McGivney et al., 1994; Gerety et al., 1994; Lesher, 1986). In accordance with the original cut-off point, in this study a score >10 was defined as presence of clinically relevant depressive symptoms. Clinically relevant depressive symptoms were further subdivided in two categories of increasing severity of depressive symptoms: a category with GDS-score 11-17 and a category GDS-score 18-30.

Onset of depressive symptoms at six months was defined as a GDS-score <11 at baseline in combination with a GDS-score >10 at follow-up on the condition that the increase in GDS-score was clinically relevant. An increase in score of more than half time the standard deviation (sd GDS-score: 6.35) is regarded as a medium effect size and was defined as a clinically relevant change (increase >3 points)(Cohen J, 1986).

In the same way *remission of depressive symptoms* was defined as a GDS-score >10 at baseline in combination with a GDS-score <11 at follow-up on the condition that the decrease in GDS-score was more than half time the standard deviation (decrease > 3 points).

Demographic characteristics

Demographic characteristics of respondents including *age*, *gender*, *partner status*, *widowhood*, *level of education*, *level of urbanization* and *religious affiliation* were gathered using a standard questionnaire. Age was dichotomised on the median: 80 years or older versus younger than 80 years. Level of education was dichotomised in 6 years or more versus less than 6 years of education. Level of urbanization was dichotomised in very dense (2500 addresses per square

kilometre) versus medium dense urbanization (1000-2500 per square kilometre). There were no low urbanization areas. Religious affiliation was dichotomized (yes/no).

Health-related characteristics

Cognitive functioning was assessed with the Mini-Mental State Examination (MMSE) (Folstein et al., 1975). Patients with MMSE scores <15 were excluded and sum scores were further dichotomised: a score between 15 and 23 referred to the presence of cognitive dysfunction.

Information about the presence of *physical illnesses* was obtained from the attending physician using a questionnaire containing thirteen main groups of diseases. The number was dichotomized on the median. *Visual and hearing acuity* were questioned and observed in the interview with the respondent by the interviewer. The scores were dichotomised: no visual impairment versus severe visual impairment including blindness; and no hearing impairment versus severe hearing impairment (but still able to communicate). *Functional limitations* were measured using the 17 items concerning somatic autonomy of the Sickness Impact Profile 68 (SIP 68) (Bruin de, 1996). The SIP was developed for patients with chronic diseases and is also used in nursing home populations (Rothman et al., 1989; Gerety et al, 1994; Mulrow et al., 1994).

Perceived *pain* was measured using the 8 items concerning pain of the Nottingham Health Profile (Erdman et al., 1994). Sum scores were dichotomised on the median.

Psychosocial characteristics

Loneliness was measured using the Loneliness Scale developed for the elderly (Jong Gierveld de and Tilburg van, 1999). This self-report scale was administered as recommended by the authors in a face-to-face interview. The sum score varies between 0 (not lonely at all) and 11 (severely lonely). We used a cut off score of 3 to distinguish between lonely / not lonely as recommended by the authors.

Social support was assessed with the Social Support List-Interaction version 12-I (SSL12-I), developed and validated in the Netherlands, consisting of 12 items meant for use in the elderly (Eijk van et al., 1994). Dichotomization of sum scores ranging between 12 (low social support) and 48 (high social support) was carried out on the median.

Negative life events in the past year were recorded as a single question with a yes/no response format.

Care-related characteristics

Use of antidepressants was scored in a yes/no format and obtained from the attending physician.

The length of stay in the nursing home was measured using a standard questionnaire and was dichotomised into a length of stay of shorter than one year/one year or longer.

Perceived inadequacy of care was measured by a 5 item scale with a yes / no format constructed out of 12 items concerning perceived care and autonomy from a Dutch Quality of Life scale designed especially for older nursing home patients (Campen van and Kerkstra, 1998). Dichotomization was based on the median.

Data Analyses

Attrition to follow-up was studied, comparing those with and without follow-up data on baseline characteristics.

Onset and remission of depressive symptoms were calculated, using a dichotomized GDS-score (cut-off score 10/11) in combination with the predefined clinically relevant change of at least 4 points (table 3a). Onset and remission of depressive symptoms were also calculated (table 3b) using a trichotomized GDS-score (0-10; 11-17; 18-30) to get informed about the relations between severity of depressive symptoms at baseline and onset and remission of depressive symptoms at follow-up.

Associations of baseline characteristics with the onset of depressive symptoms (dichotomized) were assessed with chi-square analyses, using patients without depression at baseline and at follow-up as controls. To investigate whether change in physical comorbidity, cognitive functioning, pain, functional limitations, loneliness and social support between baseline and follow-up was associated with emergence of depressive symptoms, change variables were created (increase versus stability or decline of the variable between baseline and follow-up). Associations of change variables with the onset of depressive symptoms were also assessed with chi-square analyses. Because of multiple comparisons an alpha-level of 0.01 was used in all bivariate analyses. Multiple logistic regression analysis was not carried out because of the small number of patients with an onset of depressive symptoms.

Association of baseline characteristics (use of antidepressants at baseline was added as extra variable) and change variables with persistence of depressive symptoms (dichotomized) was assessed with chi-square analyses and multiple logistic regression analysis, using patients with remission of depressive symptoms as controls. Age, gender and baseline characteristics and change variables that were significant at $p<0.2$ in the bivariate analyses, were included in the multiple logistic regression analysis. When change variables were included in the multivariate logistic regression analysis, the corresponding baseline variable was also included.

Results

Sample characteristics

Baseline characteristics of the study-sample and those lost to follow-up are shown in table 1. In the multivariate analysis (Wald chi-square 6.502; df 1; p 0.011), but not in the bivariate analyses (see table 1: Pearson chi-square 3.833; df 1; p 0.051), the only variable predicting dropping out of the study was the level of pain experienced (Pearson chi-square 3.833, df 1, p 0.050). There was no statistically significant difference in depressive symptoms between the study-sample and those lost to follow-up (neither for a dichotomized GDS-variable (Pearson chi-square 2.110, df 1, p 0.146), nor for a continuous GDS-variable (independent samples t-test; t –1.547; df 348; p 0.123)).

Age < 80 years, dense urbanization, pain, visual impairment, stroke, loneliness and perceived inadequacy of care were significantly associated with depressive symptoms at baseline (table 2). Presence of depressive symptoms at six months was significantly associated with presence

Table 1. Baseline characteristics of the study-sample and the attrition-group.

Characteristic	Percentage		Difference	
	Study sample (n=218)	*Attrition group (n=132)*	*Pearson chi square (df)*	*P*
Age <80 years	48.2	48.5	0.003 (1)	0.954
Female gender	67.9	70.5	0.252 (1)	0.616
No partner	68.8	73.5	0.866 (1)	0.352
Widowhood	54.1	59.1	0.822 (1)	0.365
Low education	38.7	47.3	2.492 (1)	0.114
Densely urbanized area	26.1	26.5	0.006 (1)	0.940
No religious affiliation	45.6	44.3	0.060 (1)	0.807
Institutionalized >1 year	60.6	58.3	0.168 (1)	0.682
Depressive symptoms (GDS>10)	41.3	49.2	2.110 (1)	0.146
Physical comorbidity >3	52.0	51.0	0.032 (1)	0.859
Cognitive dysfunction	61.5	65.9	0.697 (1)	0.404
Pain	54.1	43.1	3.833 (1)	0.051
Functional limitations	44.7	41.5	0.335 (1)	0.563
Visual impairment	20.3	21.5	0.079 (1)	0.779
Hearing impairment	10.2	6.2	1.666 (1)	0.197
Stroke	44.9	43.3	0.073 (1)	0.787
Loneliness	64.8	62.2	0.236 (1)	0.627
Lack of social support	48.8	55.2	1.281 (1)	0.258
Recent negative life event	51.4	56.8	0.939 (1)	0.333
Perceived inadequacy of care	49.8	50.4	0.013 (1)	0.909
Use of antidepressants	25.0	29.9	0.797 (1)	0.372

Notes: df = degrees of freedom; p = probability.

of depressive symptoms at baseline. In addition, dense urbanization, pain and functional limitations were associated with presence of depressive symptoms at six months (table 2).

Onset of depressive symptoms

As is shown in table 3a onset of depressive symptoms occurred in 4.7% (6/128). At baseline these patients had a higher mean GDS-score (7.67 (sd 1.03)) versus 5.39 (sd 2.83)) than patients

who remained without depressive symptoms, but the difference was not statistically significant (independent-samples t-test; t –1.953 ;df 126 ; p=0.053). Onset of depressive symptoms was not significantly associated with any of the assessed baseline characteristics or change variables.

Table 2. Correlates of depressive symptoms at baseline and at six months in backward stepwise multiple logistic regression analysis* in a sample of nursing home patients (baseline n=350; six months n=218).

	Depressive symptoms at baseline (n=155)			*Depressive symptoms at 6 months (n=61)*		
Baseline characteristic	**OR**	**95% CI**	**p**	**OR**	**95% CI**	**p**
Age <80 years	2.09	1.20-3.65	0.009			
Densely urbanized area	1.89	1.03-3.47	0.041	3.03	1.19-7.72	0.020
Depressive symptoms (gds>10)**				11.62	4.58-29.44	0.000
Pain	1.76	1.02-3.04	0.043	3.33	1.37-8.09	0.008
Functional limitations				2.90	1.21-6.94	0.017
Visual impairment	2.54	1.28-5.02	0.007			
Stroke	1.97	1.14-3.39	0.015			
Loneliness	4.47	2.44-8.19	<0.001			
Perceived inadequacy of care	2.07	1.20-3.58	0.009			

Notes: OR = odds ratio; CI = confidence interval; p = probability (derived from Wald chi square tests with df 1). * Age, gender, partner, widowhood, level of education, religious affiliation, length of institutionalization, physical comorbidity, cognitive dysfunction, visual impairment, hearing impairment, stroke, loneliness, social support, recent negative life event, perceived inadequacy of care were introduced as variables in the first step.
** Presence of depressive symptoms at baseline was only used as independent variable for presence of depressive symptoms at six months.

Outcome of depressive symptoms

Remission was observed in 36.7% (33/90) of the patients with depressive symptoms at baseline. This subgroup had a lower, but not statistically significant, mean GDS-score (15.21 (SD 3.71) versus 16.95 (SD 4.38)) at baseline than subjects in whom depressive symptoms persisted (independent-samples t-test; t 1.911; df 88 ; p=0.059). In bivariate analyses and in backward stepwise multivariate regression analysis only higher education was significantly associated (OR 3.25; 95% CI 1.26-8.33; Wald chi-square 5.99; df 1; p 0.014) with persistence of depressive symptoms.

Over the six month interval the prevalence of depressive symptoms decreased from 41.3% to 28.9%. The mean GDS-score of the study sample also decreased significantly, from 9.96 (sd 6.35) to 9.09 (sd 5.78) (paired-samples t-test; t 2.993; df 217; p 0.003).

Data about the use of antidepressants at baseline were available for 196 patients of the study sample. Antidepressants were used by 49 patients: 15.3% of the patients with a GDS-score < 10; 37.5% of the patients with a GDS-score 11-17 and 43.3% of the patients with a GDS-score > 17. There was a significant difference in use of antidepressants between the three GDS-categories (Pearson chi square 15.355; df 2; p<0.001). In patients with a baseline GDS-score >10, no significant differences in mean GDS-score were observed between users and non-users of antidepressants (independent-samples t-test; t –0.359 ;df 76 ; p 0.721).

Table 3a. Stability and change in depressive symptoms (dichotomized).

	Follow-up (6 months)					
Baseline	**GDS<11**		**GDS>10**		**Total**	
GDS<11	118	(122)[¶] *	10	(6)[¶] *	128	(58.7%)
GDS>10	39	(33)[¶] *	51	(57)[¶] *	90	(41.3%)
Total	157 (72%)	(155)[¶] (71.1%)	61 (28%)	(63)[¶] (28.9%)	218	(100.0%)

Note: GDS = Geriatric Depression Scale. [¶] Results at follow-up on the condition that the change in GDS-score was at least 4 points. * Mean GDS-scores at baseline and at follow-up (6 months) of the four groups: n = 122: baseline 5.39 (sd 2.83); follow-up 5.65 (sd 2.89), n = 6: baseline 7.67 (sd 1.03); follow-up 14.50 (sd 2.67), n = 33: baseline 15.21 (sd 3.71); follow-up 7.82 (sd 2.10), n = 57: baseline 16.95 (sd 4.38); follow-up 16.63 (sd 4.53).

Table 3b. Stability and change in depressive symptoms (trichotomized).

	Follow-up (6 months)							
Baseline	**GDS 0-10**		**GDS 11-17**		**GDS 18-30**		**Total**	
GDS 0-10	118*		9*		1*		128	(58.7%)
GDS 11-17	31*		20*		4*		55	(25.2%)
GDS 18-30	8*		8*		19*		35	(16.1%)
Total	157	(72.0%)	37	(17.0%)	24	(11.0%)	218	(100.0%)

Note: GDS = Geriatric Depression Scale. * Mean GDS-scores at baseline and at follow-up (6 months) of the nine groups: n = 118: baseline 5.24 (sd 2.75); follow-up 5.45 (sd 2.73), n = 9: baseline 8.56 (sd 1.51); follow-up 12.78 (sd 2.05), n = 1: baseline 9.00 (sd -); follow-up 18.00 (sd -), n = 31: baseline 13.16 (sd 1.70); follow-up 8.13 (sd 2.01), n = 20: baseline 13.75 (sd 2.02); follow-up 14.10 (sd 1.92), n = 4: baseline 15.00 (sd 1.63); follow-up 22.25 (sd 2.87), n = 8: baseline 20.50 (sd 3.38); follow-up, 8.00 (sd 2.33), n = 8: baseline 19.63 (sd 1.77); follow-up 15.00 (sd 1.60), n = 19: baseline 21.26 (sd 3.03); follow-up 21.00 (sd 2.40)

Discussion

Six month course of depressive symptoms

The baseline prevalence of depressive symptoms (41.3%) in the present study sample was similar to previous investigations (Katz et al., 1989; Foster et al., 1991; Parmelee et al., 1992;

Rozzini et al., 1996). The main factors contributing to this baseline prevalence of depressive symptoms in nursing home patients, both in the present study and in previous investigations, most probably are of a pre-nursing home admission origin (i.e. disabling diseases as stroke, functional limitations with loss of independency, fear for a near at hand nursing home admission). In addition presence of depressive symptoms at baseline may also have been caused by the transition from one's own home to the nursing home setting (Achterberg, 2004; Pot et al., 2005).

Contrary to what was expected based on previous investigations, we observed a substantial decrease in prevalence of depressive symptoms (41.3% to 28.9%) and a significant decrease in mean GDS-score (9.96 to 9.09) over six months (Katz et al., 1989; Parmelee et al., 1992; Rozzini et al., 1996). This was caused by a lower rate of onset of depressive symptoms than previously observed (4.7% vs. 11.9-19%) and a rate of persistence of depressive symptoms that was in the lower range of what others observed (63.3% vs. 56-88%) (Katz et al., 1989; Parmelee et al., 1992; Rozzini et al., 1996). Remission made the largest contribution to the decrease of depressive symptoms and occurred most often in the group with a GDS-score between 11 and 17 at baseline. Adaptation of the patients to the above mentioned pre-admission factors, mediated by the care and attention received in the nursing home, may have lead to a decrease of depressive symptoms.

The onset of depressive symptoms in the present study was very low compared with the previous investigations and contradicts the widespread belief that the nursing home environment is the cause of newly emerging depressive symptoms.

As this investigation was carried out in the Netherlands it is tempting to hypothesize that some specific characteristics of nursing home care in the Netherlands also play a role. The public funding of all nursing homes under the 1968 Exceptional Medical Expences Act and the fact that all nursing homes are required to employ specially trained nursing home physicians, who work in a multidisciplinary team, may contribute positively to the quality of the delivered care and thereby favor remission of depressive symptoms and prevent onset of depressive symptoms (Ribbe, 1993; Hoek et al., 2003). Future cross-national studies are needed for further validation of these hypotheses.

It is not likely that the observed decrease of depressive symptoms over six months can be attributed to selective mortality or to other reasons of attrition. The study sample and the loss-to-follow-up group showed no statistically significant difference in presence of baseline depressive symptoms or mean baseline GDS-score, but only differed in the presence of pain at baseline. It is important to note that pain, a known risk factor for the incidence of depression in elderly patients, even was more frequently present in the study sample than in the lost-to-follow-up group (Geerlings et al., 2002).

In line with the observations of Parmelee et al., depressive symptoms tended to be stable over time dependent on seriousness (see table 3b) (Parmelee et al., 1992). Only 8 (22.9%) out of 35 patients with a GDS score 18-30 at baseline were recovered (GDS-score <11) at follow-up. Patients with a GDS-score 11-17 were less stable and recovered in 56.4% (31/55). Due to lack of information about use of antidepressants during follow-up, we could not reliably determine

the contribution of antidepressants to the recovery of depressive symptoms. The antidepressants user-rate (39.7%) of patients with depressive symptoms at baseline, although much higher than in a community-based study in the Netherlands (about 20%), however suggests that pharmacological therapy can be improved (Beekman et al., 1995). Non-pharmacological interventions (interpersonal therapy, cognitive therapy) were not registered but are seldom used in nursing homes in the Netherlands. Future studies are needed and should focus on both pharmacological and non-pharmacological interventions targeted especially at the group of nursing home patients with higher (and more stable) GDS-scores (18-30).

Predictors of onset and persistence of depressive symptoms

None of the baseline characteristics were associated with onset of depressive symptoms, possibly due to the small number of patients with onset of depressive symptoms and the accompanied lack of power.

Persistence of depressive symptoms was only associated with more years of education. Contrary to earlier findings in nursing homes and in a Dutch community-based study no association was observed between persistence of depressive symptoms and physical health (physical comorbidity) or functional limitations (Parmelee et al., 1992; Rozzini et al., 1996; Beekman et al., 2001). This is probably due to the fact that disability is very important reason for nursing home admission in the Netherlands. The low average score (6.9; sd 3.8) on the SIP-scale (range: 0-17), used for measuring functional impairments, bears testimony to this. Restriction of range in the disability measure has probably caused a lack of association with depressive symptoms.

Strength and limitations

To our knowledge this is the first study reporting about the onset and outcome of depression in a larger number (14) of nursing homes.

Some limitations must also be mentioned.

Firstly, patients with serious cognitive impairment (MMSE <15) and speech or language problems were not included. This limits the generalizibility of the results to nursing home patients with these characteristics. Furthermore may the high refusal rate have biased the results: it cannot be ruled out that refusing patients more frequently had depressive symptoms.

Secondly, attrition was high, as might be expected in this very frail population. Although we observed only a significant difference for presence of pain when comparing study sample and attrition group on baseline characteristics, this does not fully preclude that attrition caused bias. Onset and remission rates of depressive symptoms in this group might differ from the study sample, for example due to differences in events that occurred during follow-up period.

Thirdly, we used the GDS as measurement instrument and can only report about depressive symptoms and not about depression as disorder. Longitudinal data on the diagnosis of formal psychiatric affective disorders were only available in a small minority of patients and could therefore not be used. The way we presented the longitudinal course of the GDS-score (dichotomized and trichotomized) however provides valuable information about the course of depressive symptoms in nursing home patients dependent on the severity of depressive symptoms at

baseline. It underscores the need to pay attention to the more seriously depressed patients, as their depressive symptoms are the most persistent.

Conclusions

Pre-admission factors and transition may largely be responsible for the high prevalence of depressive symptoms among nursing home patients. The observed decrease in prevalence of depressive symptoms over six months, is largely due to remission of depressive symptoms present at baseline. Adaptation of nursing home patients to pre-admission factors, facilitated by the nursing home environment, may explain this observed decrease of depressive symptoms. It was hypothesized that in the Netherlands the public funding of nursing home care and the employment of specially trained physicians by nursing homes may positively effect the nursing home environment and in this way contribute to the decrease of depressive symptoms during follow-up and prevent onset of depressive symptoms.
The more serious depressive symptoms (gds 18-30) tended to be the most stable during follow-up. Future investigations should focus on interventions to improve the treatment of these patients.

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Chapter 9

General discussion

Introduction

This chapter summarizes the main findings of this thesis. It also discusses some general methodological issues, although limitations of the Amsterdam Groningen Depression Study (AGED) study have been discussed in the preceding chapters. Finally, this chapter addresses implications for clinical practice, recommendations for health care policy and directions for future research regarding depression, anxiety and pain in the nursing home setting in the Netherlands.

Summary of findings

Research question 1.

What is the prevalence of anxiety in elderly nursing home patients?
Which risk indicators of anxiety can be identified in elderly nursing home patients?

Chapter 2 describes a literature review to answer these questions. Twelve articles were considered relevant. The studies differed substantially with respect to study population (i.e. residential homes, nursing homes), diagnostic instruments and diagnostic criteria that were used and the specific anxiety disorders investigated. The prevalence of anxiety disorders ranged from 0-20%. Pooled data for nursing homes only (4 studies, not from the Netherlands) resulted in a 6.9% prevalence of anxiety disorders. The most important risk indicators for anxiety disorders identified were: female gender, depression, lack of social support, poor physical health and functional and cognitive impairments.

Chapter 3 describes the results of the AGED study. The prevalence of anxiety disorders was 5.7%, of subthreshold anxiety disorders 4.2% and of anxiety symptoms 19.8% (29.7% including anxiety disorders and subthreshold anxiety disorders). Only health-related characteristics (MMSE-score > 23, depression, stroke) were significantly associated with anxiety disorders and subthreshold anxiety disorders. Demographic (> 6 years education), health-related (depression, impaired vision, pain) and psychosocial characteristics (a recent negative life event) were significantly associated with anxiety symptoms. No care-related characteristics were associated with anxiety.

Based on chapter 2 and 3 it can be concluded that (subthreshold) anxiety disorders and anxiety symptoms occur frequently among nursing home patients. There is a strong association of (subthreshold) anxiety disorders with depression and stroke. Associations with other factors differ between investigations.

Research question 2.

What is the prevalence of comorbid anxiety and depression, and of 'pure' anxiety and 'pure' depression in elderly nursing home patients?
Are risk indicators of comorbid anxiety and depression different from risk indicators of 'pure' anxiety and 'pure' depression in elderly nursing home patients?
Is comorbidity of anxiety and depression dependent on levels of severity of anxiety and depression in elderly nursing home patients?

The prevalence of comorbid anxiety and depression (CAD) was 5.1% in the AGED study (Chapter 4). Pure depression (PD) was prevalent in 17.1% and pure anxiety (PA) in 4.8%. Different patterns of risk indicators were demonstrated for pure anxiety (PA), pure depression (PD) and comorbid anxiety and depression (CAD) for the investigated baseline characteristics.
Comorbidity of anxiety and depression increased dependent on severity of both anxiety and depression.

Research question 3.

What is the effect of attributing somatic symptoms to either somatic or psychiatric disorders on the prevalence rate of major depression, generalized anxiety disorder and panic disorder in elderly nursing home patients?

Chapter 5 describes that this effect is only modest. In a sensitivity analysis all symptoms that were attributed to somatic causes were recoded as symptoms attributed to psychiatric disorder. The prevalence of major depression after recoding rose from 7.5% to 8.1%; the prevalence of generalized anxiety disorder did not change and the prevalence of panic disorder rose from 1.5% to 1.8%.

Research question 4.

Which relation have depression and anxiety with pain and with some other important aspects of quality of life - well being and disability - in elderly nursing home patients?
Which consequences have depression and anxiety for use of health care services in elderly nursing home patients?

Depressive symptoms and anxiety symptoms are both independently associated with presence of more serious pain (Chapter 6). Pain furthermore is a common problem among nursing home patients that is often persistent. Pain frequently was not recognized and the pharmacological treatment of pain was observed to be suboptimal.

Major and minor depression and/or (subthreshold) anxiety disorders are associated with less well being, but not with more disability (Chapter 7) among nursing home patients.
Patients with major or minor depression and/or (subthreshold) anxiety disorders more frequently consult a medical specialist, have a higher mean number of medications (total number) used and also use more frequently antidepressants than patients without these disorders. Use of other health care services (paramedical and psychosocial care; use of anxiolytica/hypnotica) showed no relation with presence of major or minor depression and/or (subthreshold) anxiety disorders or showed an inverse relationship (received ADL-assistance) (Chapter 7).

Research question 5.

What is the six month-incidence of depressive symptoms in elderly nursing home patients?
What is the six month-outcome of depressive symptoms in elderly nursing home patients?
Which risk indicators for incidence and persistence of depressive symptoms can be identified in elderly nursing home patients?

The six month-incidence of depressive symptoms is 4.7% in the AGED population (Chapter 8). In patients with depressive symptoms at baseline, depressive symptoms persist in 63.3% during a follow-up period of six months. The prevalence of depressive symptoms decreases from 41.3% to 28.9% in six months. Compared with previous studies in other countries the incidence is very low and the persistence is in the lower range of previously observed persistence rates of depressive symptoms (56-88%) (Katz et al., 1989; Parmelee et al., 1992; Rozzini et al., 1996). Our findings suggest that the nursing home-environment is not a major contributing factor to emergence and persistence of depressive symptoms in the Netherlands. Pre-admission factors and transition may largely be held responsible for the depressive symptoms.
Onset of depressive symptoms was not associated with any baseline variable. Persistence of depressive symptoms was only associated with higher education.

Methodological issues

This section addresses the possible bias caused by selection and attrition, the limitations of using cross-sectional data, the measurement instruments used for the main outcome variables and the use of the DSM-IV classification system.

Bias by selection and attrition

The AGED study was carried out on so-called somatic wards, because of the exclusion criterion MMSE<15. But even on these somatic wards, one out of seven patients had to be excluded because of an MMSE-score <15 (see figure 1, chapter 1).
This cognition criterion was chosen to enable the use of interview instruments for diagnosing depression and anxiety instead of observational instruments. By doing so we also avoided the

problematic issue of how to diagnose depression and anxiety disorders (using DSM-IV criteria) in a valid and reliable way (if possible) in patients with more severe cognitive impairment. Further selection was mainly caused by three factors (see figure 1, chapter 1), which could bias the observed results: short stay admissions (for example rehabilitation after hip fracture surgery and after knee and hip arthroplasty), insufficient ability to communicate and unwillingness to participate. These factors may all be associated with depression and anxiety, so the observed prevalence rates of anxiety and depression rate most probably are not overestimated rates.
Strictly speaking generalizibility of the results is limited to long stay patients of somatic wards with a MMSE>14 and with sufficient ability to communicate.

Attrition, mostly due to death and unwillingness to participate, was high (one third in six months) and associated with less pain at baseline. Especially unwillingness to participate may be related to incidence or persistence of depression and form a bias. The high attrition rate further underscores the problems encountered in longitudinal investigations in the nursing home setting.

A side effect of the high dropout after applying exclusion and inclusion criteria was that the eventual study population was rather small which negatively affected the power of the study and restricted the analyses that could be performed.

Cross sectional design

Most chapters of this thesis are based on cross sectional data of the AGED study.
Only in chapter 8 longitudinal data are used. An important limitation of this design, mentioned in many of the preceding chapters, is that no conclusions can be drawn about causal relationships.
For clinical practice however, knowledge about time-relationships (co-occurrence in time) is also important. The observation for example that depression and stroke and depression and anxiety frequently co-occur, may help to improve detection and treatment of depression in patients with stroke and detection and treatment of anxiety in depressive patients.

Measurement instruments

A large problem for (psychiatric) epidemiological studies in the nursing home setting is the lack of measurement instruments for which reliability and validity in the nursing home setting have been established. We will make some remarks about the (quality of the) measurement instruments used for the main study-outcomes (depression, anxiety, pain, well being, disability and use of health care services).

For measuring *depressive symptoms* the Geriatric Depression Scale (GDS) (Yesavage et al., 1983) was selected. The GDS is specifically developed for the elderly. A score >10 is indicative for the presence of clinically relevant depressive symptoms. The instrument has been found to be reliable and valid with good specificity and sensitivity for diagnosing depression in multiple settings and has also been recommended for use in the nursing home population with this cut-off score (Lesher, 1986; Gerety et al., 1994; McGivney et al., 1994). The observed specificity (0.69 for minor and major depression) and the sensitivity (0.85 minor depression, 0.96 major depression) in the AGED population, using a cut-off score of 10/11, for diagnosing depression (gold standard: SCAN diagnoses) was satisfactory (Jongenelis et al., 2005). The internal consistency was good also: Cronbachs alpha was 0.88. (Jongenelis et al., 2005).

Major and minor *depression* and *anxiety disorders* (generalized anxiety disorder, panic disorder, phobias) according to the DSM-IV criteria were measured using the Schedules for Clinical Assessment in Neuropsychiatry (SCAN), version 2.1. The SCAN is a semi-structured diagnostic interview, including sections in which DSM-IV criteria for depressive disorders and anxiety disorders are incorporated (Wing et al., 1990; World Health Organization, 1999). Reliability proved satisfying in adult outpatients and inpatients (Brugha et al., 1999; Rijnders et al., 2000).
Although the reliability and validity of the instrument for older people is unknown, it appears to be a useful instrument for psychiatric epidemiological research in a nursing home population. Because the interview is semi-structured, it offers the interviewer the opportunity to pose questions in alternative ways to verify whether the patient hears and understands the question adequately. In addition, interviewers can elaborate on a symptom until they have enough information to decide whether it is present at a clinically significant level. In a sample of frail and mildly cognitively impaired respondents this is of major importance and makes this instrument preferable above more structured interviews like for example the Diagnostic Interview Schedule (DIS) (Robins et al., 1981).

Pain was measured with the subscale pain (8 items) of the Nottingham Health Profile (NHP) (Erdman et al.,1993). The NHP was originally developed for non-institutionalized elderly patients suffering from chronic diseases; reliability, validity and sensitivity to changes were satisfying (Van Campen and Kerkstra, 1996). The internal consistency was satisfying (Cronbachs alpha 0.70-0.79) in previous studies among somatic nursing home populations in the Netherlands (Van Campen and Kerkstra, 1998; Holtkamp et al., 2000). In the AGED study Cronbachs alpha was 0.70.

For *well being* the Philadelphia Geriatric Centre Morale Scale (PGCMS, 17 items) was used. The scale was developed for institutionalized elderly patients (Lawton, 1972; Morris and Sherwood, 1975; Lawton, 1975). In the development sample of the Dutch version of the PGCMS Cronbachs alpha was 0.73 (Van Campen and Kerkstra, 1998). In two other samples of Dutch nursing home residents Cronbachs alpha was 0.79 (Holtkamp et al., 2000) and 0.72 (Gerritsen, 2004). In the AGED population Cronbachs alpha was even higher: 0.84.

Disability was measured using the subscale somatic autonomy (17 items) of the Dutch version of the Sickness Impact Profile (SIP) (De Bruin, 1996). The SIP was developed for patients with

chronic diseases and is also used in nursing home populations (Rothman et al., 1989; Gerety et al, 1994; Mulrow et al., 1994). The internal consistency of the Dutch version of the subscale somatic autonomy was satisfying in previous samples of somatic nursing home patients (Cronbachs alpha: 0.78 and 0.85) (Van Campen and Kerkstra, 1998; Holtkamp et al., 2000). In the AGED study Cronbachs alpha was 0.82.

Use of health care services, except medication use and use of assistance in ADL, was measured by a self constructed questionnaire (yes/no questions) that was filled in by two nursing staff members directly involved in the care of the patient. Medication use was assessed by chart review. Use of assistance in ADL was measured with a 10-item questionnaire based on the Groningen Activity Restriction Scale that was also filled in by two nursing staff members directly involved in the care of the patient (Kempen et al., 1993). Scores range between 0 (no need of assistance in ADL) and 10 (maximum need of assistance in ADL).

Use of the DSM-IV classification

Depression and anxiety disorders were classified according to DSM-IV criteria (APA, 1994) because it is the most widely used classification system for psychiatric disorders and enables comparison with other investigations.

Some critical remarks in the literature regarding the use of the DSM-IV classification were mentioned in the introduction chapter that will be addressed here in more detail.

A first important critical remark was that the DSM-IV classification is not developed for an elderly population and especially not for institutionalized frail elderly. This might lead to an underestimation of the prevalence of depression and anxiety when one is assuming that disease symptoms often are less pronounced and less specific in the aged. We therefore used besides the DSM-IV criteria also criteria defining subthreshold anxiety disorders (based on criteria developed by Angst et al. (1997) and Heun et al. (2000)) and DSM-IV-research criteria for minor depression. These subthreshold criteria required presence of a lower number of symptoms, or a shorter period of time symptoms were present, or less serious consequences.

The clinical significance of these subthreshold disorders is still under discussion.

In previous community-based studies among elderly however, subthreshold syndromes of depression and anxiety were, just like full blown DSM syndromes, also associated with negative consequences like less well being, more disability and more use of health care services (Beurs de et al.,1999; Beekman et al., 2002a, 2002b). Patients with a subclinical depression were more likely to develop a DSM-IV depressive disorder also. These observations support the clinical significance of the subthreshold syndromes also for the nursing home situation.

A second critical remark concerned the role of the often-present somatic comorbidity in elderly people. It was feared that use of the DSM-IV criteria might cause underestimation of the prevalence of depression and anxiety by over-attribution of somatic symptoms to somatic disorders instead of attribution of somatic symptoms to psychiatric disorders.

In chapter 5 this was investigated for the AGED population. Trained interviewers attributed symptoms only to psychiatric disorders when they assumed that the symptoms were caused by a psychiatric disorder. When they assumed that symptoms were caused by a somatic disorder of when they were in doubt, somatic symptoms were attributed to a somatic disorder. We re-attributed all somatic symptoms that were attributed to a somatic disorder into somatic symptoms attributed to psychiatric disorders. Contrary to our expectations this caused only a modest rise in prevalence of depression and anxiety disorders. The fear for underestimation of depression and anxiety due to somatic comorbidity appears to be unjustified.

A third critical remark concerned the strict separation between depressive disorders and anxiety disorders made by the DSM-IV. In the AGED population co-occurrence of depression and anxiety was frequently seen and dependent on severity of depression and anxiety (chapter four). These findings suggest that at least for clinical practice the strict separation is not very useful.

Implications for clinical practice and health care policy

Anxiety and depression

Anxiety (9,9%) and depression (22,2%) frequently occur in nursing home patients.

Anxiety most often is co-occurrent with depression, dependent on severity both of anxiety and depression. Depression mostly is present as a 'pure' depression. Both, anxiety and depression have negative consequences for well being and use of health care services. Adequate detection and, subsequently, adequate treatment of these disorders therefore is indicated. Unfortunately, the detection of depression proved to be poor in nursing homes in the Netherlands (Falck et al., 1999; Jongenelis, 2006).

A rational strategy to improve detection (and subsequent treatment) of depression and anxiety is screening for depression and examining every patient with a depression on the presence of anxiety. The most severe anxiety disorders will also be detected in this way.

A shortened version of the GDS can be used for this screening on depression (Jongenelis et al., 2005), which consumes less time and is a lower burden for the patients than the 30-item version.

Screening should be done before each multidisciplinary care plan discussion of a nursing home patient and a positive screening on depression should result in a diagnostic procedure (has the patient a depression?) and, if this question is answered 'yes', in appropriate treatment actions as part of the multidisciplinary care plan. Adequate treatment of depression moreover is also expected to have positive influence on pain.

An intriguing observation concerning the prevalence of anxiety and depression in old age is that the prevalence of anxiety appears to be stable (about 5-10%) irrespective of the subpopulation of elderly (general population, primary care users, long term care population) that is studied (Flint, 1994; Vermeulen et al., 1994; Smalbrugge et al., 2003). The prevalence of depression however is different in each of these populations. Major depression for example, increases from about 2% in the general elderly population to about 5% in the elderly primary care population (Beekman et al., 1999; Cole et al., 1999) to about 15% in elderly in nursing homes (Jongenelis et al., 2003).

The increase in prevalence of depression across the subpopulations of elderly studied might be explained by differences in (accumulation of) 'losses' (loss of health, loss of functional indepence, loss of relatives who die) and differences in capability to escape from or cope with the resulting situation (Goldberg and Huxley, 1992) across the subpopulations.
External threats, more important in the etiology of anxiety (Lazarus, 1991), are probably more equally distributed across the subpopulations. This may explain the stable prevalence of anxiety in all subpopulations of elderly.

Pain

Pain is frequently present, often chronic and associated with depressive symptoms as well as anxiety symptoms. Recognition and pharmacological treatment both are suboptimal.
Analogue to screening for depression, regular assessment of pain should take place among nursing home patients followed by adequate treatment according to pain-guidelines.
In conclusion, depression and pain should be standard topics in the multidisciplinary care plan discussion (analogue to pressure ulcers, feeding problems, fluid intake). Given the observed mutual influence of depression and pain, this may have a large positive effect on the well being of nursing home patients.
This requires professionals who are trained adequately and administrators who feel challenged to improve the care on these topics.
In the training programme of nursing home physicians, psychologists, nurses and other health care workers in nursing homes therefore more attention should be paid to the detection and treatment of depression, anxiety and pain. Guidelines, when available, should be used in the training.
Directors and management of nursing homes can be encouraged in efforts to improve the care for depression, anxiety and pain by developing and implementing quality indicators for these topics, that can be used by The Dutch Health Care Inspectorate as measurements of the quality of care in nursing homes. Examples of quality-indicators for depression and pain-care could be: 'performing a regularly screening (every six months) on depression ' and 'performing a regularly assessment of pain (every six months)'.

Implications for future research

Firstly, research is needed on (the effect of) implementation of a screening instrument on depression in the care for institutionalized elderly. A reliable screening instrument, the Geriatric Depression Scale, is available for nursing home patients with a MMSE-score >15: it is now time to implement and to investigate which strategy is the best to do so (Jongenelis et al., 2005). For more severely cognitively impaired patients an observational scale, such as the Neuropsychiatric Inventory: Nursing Home version (NPI-NH) (Iverson et al., 2002) could be used.

Secondly, the finding that so many patients suffer from pain makes clear that more research in this field is necessary. Research should take place to enhance detection: which instruments

are reliable and valid for measuring pain, both for cognitively intact and cognitively impaired nursing home patients? How can these instruments best be implemented?

Thirdly, research is needed into therapeutic strategies for depression, anxiety and pain. Given the complex interrelationships between depression, anxiety and pain it appears most fruitful to develop strategies that aim at several targets at the same time. A multifaceted shared care intervention, which appeared promising for treatment of depression in residential care in previous research (Llewellyn-Jones et al., 1999, 2001), could be used. Several interventions were combined in this study such as: training of practitioners and care-personnel in detection and management of depression; depression related health education to all residents and activity programmes for all residents.
The stepped care programme used in a recent Dutch study, resembles the multifaceted shared care intervention, but was more focused on individualized interventions and had less interventions targeted at the whole group of residents. It fitted only a small proportion of the patients, not only because of the strict exclusion criteria (due to the individualized interventions), but also because one of the individualized interventions (Interpersonal Psychotherapy) was applicable only to a small proportion of the population because of cognitive and communication barriers (Wit de et al., 2005).
Probably the most promising strategy is a combination of group-targeted interventions (screening, education, activities) and individual-targeted interventions (specific pharmacological and non-pharmacological treatment) on depression, anxiety and pain. Individual-targeted interventions then can well be applied in a stepped-care manner. Future investigations should evaluate the effect of such treatment strategies and not only use depression, anxiety and pain as outcome measure but also 'quality of life related outcome measures' like well being and functional ability. The reason for this is that the aim of nursing home medicine is not merely to treat depression, anxiety and pain but 'to promote, preserve and restore the quality of life of their patients' (NVVA/NVSG, 2003).

Fourthly, the AGED study did not investigate the prevalence of depression and anxiety disorders in more serious cognitively impaired nursing home residents (MMSE<15), which constitute far more than half of the entire nursing home population in the Netherlands, including both somatic and psychogeriatric wards (Boersma et al., 1995).
These more serious cognitively impaired patients, mostly due to dementia, frequently express depressive symptoms and anxiety symptoms with a negative impact on their quality of life in international studies (Brodaty et al., 2001; Wancata et al., 2003; Selwood et al., 2005) and therefore also deserve research attention in the Netherlands. The results of the ongoing WAALBED-study of the University Medical Center St Radboud in Nijmegen, which investigates the prevalence of behavioral and psychological symptoms of dementia (BPSD) among demented patients in nursing homes in the Netherlands, hopefully will provide more information in the nearby future. Presented, but until now unpublished, results of this study, mention a prevalence of anxiety symptoms of about 25% and a prevalence of depressive symptoms of about

20% (NVVA nascholing dementie, Nieuwegein, 2005) based on observation with the Neuropsychiatric Inventory: Nursing Home version (NPI-NH) (Iverson et al., 2002).
For diagnosing depressive symptoms and anxiety symptoms in cognitively impaired patients most studies use observational instruments like the NPI-NH. Whether it is possible, based on these observational symptoms, to conclude that a depression or anxiety disorder according to DSM-IV criteria is present, is questionable. Applying DSM-IV criteria of depression and anxiety disorders when verbal communication is hampered considerably by cognitive impairment seems inappropriate as these criteria presume the presence of some reflection on one's own situation and some communication about this reflection.
A 'diagnosis' of depression and anxiety in these more serious cognitively impaired patients therefore means a diagnosis of 'symptoms of depression and anxiety', registered with a specific scale.
It is obvious however that also these 'observational diagnoses' of depressive symptoms and anxiety symptoms can have a strong negative impact on the quality of life of these patients (Selwood et al., 2005) and that treatment is desirable. The question whether treatment data of DSM-IV depression and anxiety disorders also apply to 'observational diagnoses' of depressive symptoms and anxiety symptoms is not investigated. Research studying the effect of pharmacological and non-pharmacological treatment options for these 'observational diagnoses' of depressive symptoms and anxiety symptoms is therefore highly needed to make the treatment of depressive symptoms and anxiety symptoms in these cognitively impaired patients (more) evidence based.

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Angst en depressie bij verpleeghuispatiënten

Prevalentie, risico indicatoren en gevolgen

Inleiding

In Nederland zijn er anno 2006 ruim 350 verpleeghuizen. In deze setting verleent de verpleeghuisarts in multidisciplinair verband, en al dan niet tijdelijk of permanent, behandeling en zorg aan kwetsbare ouderen. Deze ouderen kampen veelal met verschillende, gelijktijdig aanwezige, vragen of problemen op zowel lichamelijk als geestelijk gebied.
Belangrijke doelen van de zorg en behandeling in het verpleeghuis zijn het bevorderen, behouden en herstellen van de functionele zelfstandigheid en de kwaliteit van leven van de patiënt. 'To add life to years' achten de meeste patiënten meer van waarde dan 'to add years to life'.
De aanwezigheid van vaak meer dan een probleem tegelijkertijd, gecombineerd met de na te streven doelen, maakt verpleeghuisgeneeskunde tot een complex en boeiend vak.

De werkwijze van de verpleeghuisgeneeskunde is een probleemgeoriënteerde.
Om een specifiek probleem effectief en efficiënt te herkennen en behandelen heeft de verpleeghuisarts, net als artsen uit andere specialismen, basisinformatie nodig over de prevalentie, incidentie, risicofactoren en gevolgen van het onderhavige probleem in zijn patiëntengroep. Daarnaast is uiteraard kennis nodig over de beste wijze van diagnostiek en behandeling van het probleem.

Van veel problemen – zoals angst, depressie, pijn – geldt dat deze informatie maar zeer beperkt voorhanden is voor verpleeghuispatiënten.
Dit proefschrift beoogt om ten aanzien van angst en depressie, en in mindere mate ook ten aanzien van pijn, een bijdrage te leveren aan de kennis over de prevalentie, incidentie, risicofactoren en gevolgen van deze problemen bij longstay somatische verpleeghuispatiënten. Met deze kennis kunnen de mogelijkheden tot herkenning en behandeling van deze problemen toenemen. Dit zal naar verwachting een positieve bijdrage leveren aan de functionele zelfstandigheid en kwaliteit van leven van deze patiënten.

Voor dit proefschrift is hoofdzakelijk gebruik gemaakt van de gegevens verzameld in de Amsterdam Groningen Elderly Depression study (AGED study). Deze studie richtte zich op depressie in verzorgingshuizen (Universitair Medisch Centrum Groningen) en op depressie en angst in verpleeghuizen (VU medisch centrum).

Hoofdstuk 2 beschrijft de resultaten van een literatuuronderzoek naar het voorkomen van angst(stoornissen) bij verpleeghuispatiënten. De meeste studies blijken cross-sectioneel van opzet te zijn en zijn verricht in het buitenland. De gepoolde prevalentie van angststoornissen in de studies is 6.9%. De enige beschikbare longitudinale studie laat een stabiele prevalentie zien: herstel van bestaande gevallen en ontstaan van nieuwe gevallen zijn in evenwicht.
Slechts in enkele studies is ook gekeken naar risicofactoren. Vrouwelijk geslacht, depressie, gebrek aan sociale steun, slechte lichamelijke gezondheid en aanwezigheid van functionele beperkingen komen naar voren als risicofactoren.

Hoofdstuk 3 rapporteert over de prevalentie en risico-indicatoren van angst onder verpleeghuispatiënten in de AGED study. In deze studie worden, analoog aan het onderscheid major depressive disorder en minor depression, twee klassen van angststoornissen onderscheiden: angststoornissen volgens DSM-IV criteria en zogenoemde subthreshold angststoornissen (angststoornissen die net niet voldoen aan de DSM-IV criteria). Daarnaast worden angstsymptomen onderscheiden: wel angstklachten, maar onvoldoende voor classificatie als subthreshold angststoornis of DSM-IV angststoornis.
De prevalentie van angststoornissen in de AGED study is 9.9%: 5.7% heeft een DSM-IV angststoornis en 4.2% een subthreshold angststoornis. De prevalentie van angstsymptomen is 19.8%. Er wordt een significante associatie van (subthreshold en DSM-IV) angststoornissen gevonden met depressie, beroerte en een Mini-Mental State Examination (MMSE)-score >23.
Angstsymptomen blijken significant geassocieerd te zijn met meer dan zes jaar schoolopleiding, depressie, visus beperkingen, pijn en een recent negatief life-event.

Hoofdstuk 4 beschrijft de resultaten van de AGED study met betrekking tot de prevalentie van angststoornissen en depressie en hun mate van comorbiditeit.
Comorbiditeit van minor depression of major depressive disorder *en* een angststoornis (DSM-IV of subthreshold) is aanwezig bij 5.1% van de onderzochte populatie. Aanwezigheid van alleen een angststoornis (DSM-IV of subthreshold) wordt gevonden bij 4.1%. Aanwezigheid alleen van een minor depression of major depressive disorder komt voor bij 17.1%.
De mate van comorbiditeit van depressie en angst blijkt toe te nemen met de ernst van de depressie en de angststoornis.
De gevonden risico indicatoren voor comorbide angst en depressie, voor aanwezigheid van alleen een angststoornis en voor aanwezigheid van alleen een depressie verschillen grotendeels van elkaar.
Pijn, eenzaamheid en een als slechter ervaren kwaliteit van zorg zijn risico indicatoren voor comorbide angst en depressie. Leeftijd <80 jaar en meer ervaren sociale steun zijn risico indicatoren voor aanwezigheid van alleen een angststoornis. Leeftijd <80, visus beperkingen, eenzaamheid en een recent negatief life-event zijn risico indicatoren voor aanwezigheid van alleen een depressie.

Op basis van hoofdstuk 2, 3 en 4 kan geconcludeerd worden dat angststoornissen bij 7-10% van de verpleeghuispatienten vóórkomen. De prevalentie van angststoornissen in de algemene bevolking, zowel in Nederland als in het buitenland, is van een vergelijkbare grootte. Een verklaring voor de stabiele prevalentie van angststoornissen in deze verschillende subpopulaties kan zijn dat externe bedreigingen, die belangrijk geacht worden voor het ontstaan van angst, een relatief constant gegeven blijven.
Depressie komt veel frequenter voor bij verpleeghuisbewoners dan bij ouderen in de algemene bevolking. De prevalentie is twee tot vier keer zo hoog, afhankelijk van de ernst van de depressie. Een verscheidenheid van verlieservaringen zoals verlies van gezondheid, verlies van functionele zelfstandigheid en verlies van eigen woonomgeving *in combinatie met* de relatieve onmogelijkheid om wat aan de ontstane situatie te veranderen zou de hoge prevalentie van depressie in verpleeghuizen kunnen verklaren.
Net als bij ouderen in de algemene Nederlandse bevolking, blijkt comorbiditeit van angst en depressie afhankelijk van de ernst van de angst en de depressie. Hoe ernstiger de angst en depressie, hoe meer comorbiditeit van beide. Dat stelt vragen bij het sterke onderscheid dat de DSM-IV classificatie maakt tussen beide stoornissen en kan als een ondersteuning gezien worden voor de hypothese dat angst en depressie tot dezelfde groep psychiatrische stoornissen behoren en daarvan twee verschillende uitingsvormen zijn.
Het feit dat de risicofactoren voor comorbide angst en depressie, voor ‘pure’ angst en voor ‘pure’ depressie grotendeels verschillend zijn, lijkt deze hypothese evenwel te weerspreken. Dit hoeft echter niet het geval te zijn. Mogelijk hebben depressie en angst een gemeenschappelijke, genetische, basis en veroorzaakt de wisselwerking met de hier onderzochte risico indicatoren en andere niet onderzochte omgevingsfactoren de verschillende uitingsvormen: depressief *danwel* angstig *danwel* een combinatie van beide.

Hoofdstuk 5 gaat in op de in de literatuur vaak gedane suggestie dat prevalentie schattingen van depressie en angst bij ouderen te laag zijn doordat ouderen zelf en hun hulpverleners de somatische symptomen van angst en depressie ten onrechte aan somatische aandoeningen toeschrijven.
Onderzocht is hoe groot het effect van dit verkeerd toeschrijven van symptomen aan een lichamelijke aandoening op de prevalentie maximaal zou kunnen zijn in de AGED study. De prevalentie van angst en depressie blijkt met ongeveer 10% (= het maximaal mogelijke effect) te stijgen als alle aan lichamelijke aandoeningen toegeschreven symptomen ‘gehercodeerd’ worden in symptomen veroorzaakt door angst en/of depressie. Onderschatting van de prevalentie van depressie en angst bij ouderen door tevens aanwezige somatische comorbiditeit lijkt daarmee in de verpleeghuissetting erg mee te vallen.

Hoofdstuk 6 rapporteert over de aanwezigheid van pijn en de relatie daarvan met angst en depressie in de AGED study. Er wordt veel pijn geleden: de prevalentie van milde en van ernstige pijn is beide ruim 30%. Ernstige pijn is significant geassocieerd met depressieve symptomen en angstsymptomen.

Pijn lijkt vaak chronisch: 80% van de patiënten met pijn op baseline geeft ook een half jaar later aan pijn te hebben. Pijn en depressieve symptomen op baseline vormen de belangrijkste risicofactoren voor aanwezigheid van ernstige pijn na een half jaar.
De herkenning en behandeling van pijn blijken niet optimaal.

Hoofdstuk 7 gaat over de gevolgen van angst en depressie bij verpleeghuispatiënten in de AGED study. Angst en depressie zijn significant geassocieerd met een sterk verminderd gevoel van welzijn en een verhoogd zorggebruik (hogere consultatiefrequentie van specialisten; hoger medicijnverbruik). Anders dan bij ouderen in de algemene populatie wordt geen relatie gevonden met functionele beperkingen, hetgeen niet verwonderlijk is omdat functionele beperkingen een belangrijke reden voor opname in het verpleeghuis zijn en daardoor geen onderscheidende factor kunnen zijn in deze populatie.

Hoofdstuk 8 beschrijft het beloop van depressieve symptomen in de AGED study, gemeten met de Geriatric Depression Scale (GDS, 30-item versie).
De prevalentie van depressieve symptomen blijkt ruim 30% te dalen in een half jaar. Dit wordt veroorzaakt door de combinatie van een lage frequentie van nieuw ontstane depressieve symptomen (minder dan 5%) en het verdwijnen van de depressieve symptomen bij ongeveer 40% van de patiënten die bij aanvang depressieve symptomen hadden. Persisteren van depressieve symptomen treedt vaker op als depressieve symptomen ernstiger zijn (GDS score 18-30 versus GDS score 11-17) en hangt significant samen met een hoger opleidingsniveau. Er zijn geen risicofactoren gevonden die het ontstaan van depressieve symptomen voorspellen.
Vergeleken met eerdere studies in buitenlandse verpleeghuizen is de sterke daling van de prevalentie van depressieve symptomen uniek. De lage incidentie van nieuwe depressieve symptomen en het grote aantal patiënten dat herstelt van depressieve symptomen weerleggen de vaak gehoorde vooronderstelling dat het verpleeghuis depressies veroorzaakt. Waarschijnlijk bestaan de depressieve symptomen al bij opname en zijn zij veroorzaakt door redenen die samenhangen met de verpleeghuisopname: aanwezigheid van aandoeningen als een CVA, aanwezigheid van functionele beperkingen met verlies van functionele zelfstandigheid, angst voor een ophanden zijnde verpleeghuisopname. Na verpleeghuisopname vindt vervolgens vermoedelijk accommodatie aan de nieuwe situatie plaats en daalt de prevalentie. Het is aannemelijk dat unieke kenmerken die het Nederlandse verpleeghuismodel onderscheiden van het buitenland, zoals de AWBZ-financiering (geen profit-doelstelling) en de aanwezigheid van specifiek opgeleide verpleeghuisartsen in dienst van de verpleeghuisorganisatie werkend in een multidisciplinair team, bijdragen aan een omgeving waarin die accommodatie gefaciliteerd wordt.

Hoofdstuk 9 vat de bevindingen van de eerdere hoofdstukken nogmaals samen, bespreekt de belangrijkste beperkingen van het onderzoek en schetst enkele implicaties voor de klinische praktijk, het gezondheidszorgbeleid en voor toekomstig onderzoek.

De hoge prevalentie van depressieve stoornissen, het feit dat angst frequent vóórkomt samen met depressie en het feit dat de gevolgen van depressie en angst aanzienlijk zijn, pleiten voor het invoeren van screening op depressieve symptomen in het verpleeghuis. Screening zal enkele weken na opname moeten gebeuren en zal periodiek, bij voorkeur voor de cyclische multidisciplinaire bespreking van elke bewoner, herhaald moeten worden.
Ook wordt een pleidooi gehouden voor een periodiek assessment van pijn, vanwege de hoge prevalentie en de niet optimale herkenning van pijn in de onderzochte populatie. Dit assessment zal, analoog aan de screening op depressieve symptomen, bij opname en periodiek rond de multidisciplinaire bespreking van de bewoner moeten plaatsvinden.
Door de resultaten van de screening op depressieve symptomen en de assessment van pijn in een cyclisch plaatsvindend multidisciplinair overleg te bespreken, kunnen de herkenning en behandeling van depressie (*en* comorbide angst) en pijn verbeteren. Dit zal naar verwachting positief bijdragen aan de kwaliteit van leven van verpleeghuispatiënten.

Om dit bereiken zal geïnvesteerd moeten worden in bij- en nascholingsactiviteiten over depressie, angst en pijn aan professionals werkzaam in de verpleeghuizen.
Ook de implementatie van geschikte kwaliteitsindicatoren door de verpleeghuissector kan bijdragen aan een verbetering van de zorg voor depressie, angst en pijn.

Toekomstig onderzoek zal zich moeten richten op het effect van het implementeren van screening op depressieve symptomen en van assessment van pijn bij verpleeghuispatiënten. Daarnaast is onderzoek nodig naar de optimale behandelingsstrategieën voor depressie, angst en pijn bij verpleeghuispatienten.
Tenslotte is het van belang problemen als depressie, angst en pijn ook te onderzoeken in de groep patiënten met ernstige cognitieve beperkingen die nu al ruim de helft van de verpleeghuispopulatie vormen.

Terugblik en dankwoord

Een wat bijzondere samenloop van omstandigheden vormde de aanleiding tot het in dit proefschrift beschreven onderzoek.

a) De Vereniging Het Zonnehuis maakte de bijzondere leerstoel die Jan Eefsting bezet financieel mogelijk. In de begroting was ook een aantal uren formatie voor een stafarts opgenomen, waarop ik aangesteld werd en die grotendeels door mij gebruikt is voor dit onderzoek in de afgelopen jaren.
b) Stichting De Open Ankh en verpleeghuis Bovenwegen stelden mij voor 4 jaar in de gelegenheid een deel van mijn aanstelling voor onderzoek te gebruiken. Daarnaast maakten zij het volgen van een aantal cursus en het bezoeken van een aantal congressen mogelijk.
c) Lineke Jongenelis had in het kader van haar onderzoek naar depressie onder verpleeghuispatiënten ook data verzameld over angst bij deze patiënten, die zij zelf niet voor haar proefschrift ging gebruiken en door mij gebruikt konden worden.
d) En, last but not least, leken angst en depressie mij voldoende interessant, en praktisch relevant, om daar een aantal jaren de nodige tijd, energie en passie aan te besteden.

Ik ben erg blij dat deze samenloop van omstandigheden zich voordeed en heb er van genoten de afgelopen vier jaar!
Nu het onderzoek bijna afgerond is, althans voor wat betreft het proefschrift, wil ik graag een aantal mensen en organisaties bedanken.

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Liefste Anne-Marie, David, Elsbeth en Jibbe. Gelukkig is er poëzie om het essentiële te verwoorden.

LIEFSTE
ik zoek een woord
een heel nieuw woord
een woord dat niemand kent
ik zoek een woord
dat zeggen wil
dat jij de liefste bent

Hans & Monique Hagen in *Jij bent de liefste*. Amsterdam/Antwerpen: Em. Querido's Uitgeverij b.v., 2002.

Curriculum Vitae

Martin Smalbrugge is op 3 mei 1963 geboren in Rijssen. In 1981 behaalde hij zijn gymnasium-B diploma aan het Christelijk Lyceum Almelo te Almelo. Hij studeerde Geneeskunde aan de Rijksuniversiteit Utrecht. Tijdens zijn studie was hij lid van het bestuur van de Medische Studenten Faculteitsvereniging Utrecht, studentlid van de faculteitsraad, redactielid van het faculteitsblad Arts en Fiets en student-assistent bij de vakgroepen medische microbiologie, medische psychologie, sociale geneeskunde en huisartsgeneeskunde. Na zijn artsexamen werkte hij als arts-assistent/poortarts in het Zeister ziekenhuis (Zeist) en het Zuiderziekenhuis (Rotterdam). Vanaf 1992 werkt hij in de verpleeghuissector. Na zijn opleiding tot verpleeghuisarts (verpleeghuis Bovenwegen Zeist; verpleeghuisartsopleiding Vrije Universiteit Amsterdam) van 1992-1994, werkt hij als verpleeghuisarts in deeltijd-aanstelling in verpleeghuis Bovenwegen (sinds 2005 één van de locaties van Stichtse Warande). In 1998 en 1999 was hij daar verpleeghuisarts opleider. Sinds 1997 is hij tevens universitair docent bij de afdeling Verpleeghuisgeneeskunde van het VU medisch centrum: tot 2002 bij de beroepsopleiding tot verpleeghuisarts Gerion (onderwijsontwikkelaar en verpleeghuisartsbegeleider) en vanaf 2002 (stafarts en onderzoeker) bij prof. dr. J.A. Eefsting, bijzonder hoogleraar verpleeghuisgeneeskunde (afdeling Verpleeghuisgeneeskunde/EMGO). Binnen de Nederlandse Vereniging van Verpleeghuisartsen was hij lid van de Commissie Wetenschappelijke Aangelegenheden en is hij momenteel voorzitter van de Werkgroep Richtlijnontwikkeling.
Martin is getrouwd met Anne-Marie Donselaar. Zij hebben drie prachtkinderen: David (10), Elsbeth (bijna 7) en Jibbe (5).

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Nursing home physicians aim to promote, preserve and restore the quality of life of their patients in close cooperation with other members of the multidisciplinary team: nurses, psychologists, recreational therapists, physiotherapists, occupational therapists, speech therapists, social workers and pastoral counselors.

This thesis studies the epidemiology of anxiety and depression in nursing home patients and the impact of these disorders on quality of life and consumption of health care services of nursing home patients. Subsequently, the implications of the findings for caregivers in nursing homes, and in particular for nursing home physicians, are discussed.